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# FURTHERANCE OF TREATMENT OF DIABETES MELLITUS

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## DIABETES THEN AND NOW

Fifty years ago we struggled to keep patients alive, but now we strive to keep them healthy. Then two thirds (63.8 per cent) of our patients died of diabetic coma, but today death from coma is so rare (1.9 per cent) that a certificate with this diagnosis should attract the attention of the medical examiner. Then, few in the first thirty years of life lived long enough to die of arteriosclerosis, but now even up to the age of 40 this is the most prominent cause of death, and of our patients of all ages over two thirds (69.1 per cent) succumb to it. Yet during the first fifteen years of this century, we felt decidedly more hopeless when confronted with a case of diabetic coma than we do today with the problem of arteriosclerosis. Coma is distinctive of the diabetic person, but arteriosclerosis is fatal alike to both diabetic, 69 per cent, and nondiabetic persons, 60 per cent, and the riddle to solve is why the former experience it prematurely and more rapidly than the latter. Decipher that and the lives of 143,000,000 nondiabetic persons in the country can be prolonged. Diabetic persons in the United States constitute a mass experimental group for the study of arteriosclerosis. To help one diabetic person keep young is to postpone growing old for 70 nondiabetic persons.

## PESSIMISM VERSUS OPTIMISM

Since pessimism is so rife in any discussion of prevalence of arteriosclerosis in the diabetic person, let us meet the situation head on to see if we have reached an impasse. At any rate, we have carried our diabetic patients up into the arteriosclerotic zone, for now on the average they die at 64 years instead of 44 (1898-1914), with a duration of the disease so long, fourteen and four-tenths years, that any of them contracting it at 62 years or later must exceed the normal life expectancy or else injure our duration statistics. There have been four notably pessimistic articles. Dolger [1] studied 20 patients with diabetes of twenty-five years' duration, and among these there was not one who escaped vascular damage as shown by retinal hemorrhages and albuminuria or hypertension, or both, in varying degree. But his point of view is handicapped by his contact exclusively with patients of other doctors, yours and mine, doubtless poorly treated, because he graduated from the medical school only fifteen years ago. I like to think that when he has been in practice ten years longer and followed up his own cases intimately for a quarter of a century he will report more encouragingly. A second contribution stems from Rosenbusch,[2] a pediatrician in Zurich, who paints so dark a picture from his own clientele of 88 cases in childhood, of whom 24 were dead, that cardiovascular-renal disease appears almost inevitable. But I suspect that this writer did not have a fair show in the treatment of his children. Reading between the lines, I judge that often insulin and food were deficient and their family background in many instances was not conducive to health. Chute [3] of Toronto described 123 cases in childhood in which diabetes developed prior to 1932. Of these 52 subjects were living, 58 dead and 13 untraced. Of the 29 who survived twenty years, 24 were living. These persons showed pronounced evidence of degenerative lesions, arteriosclerosis, albuminuria and retinitis. These complications are present to a lesser degree in the group surviving fifteen years. The conclusions of Dr. Priscilla White and her associate [4] on detailed investigation of 220 patients among 387, with the disease for twenty or more years and with onset in childhood before the age of 15 years, were appalling, because only 17 were free from vascular disease.

On the optimistic side of the ledger is the fact that in 17 cases of childhood diabetes there was no evidence of arteriosclerotic degenerative lesions as revealed by studies of the eyes by ophthalmologists, vessels by roentgenologists and careful physical examinations by us. Moreover, there are at least 4 patients with onset in childhood who, after twenty-five years of the disease, are likewise perfect and to whom a Victory Medal, designed by Amelia Peabody, has been awarded. When one considers that these are patients with onset antedating insulin therapy or in the first one or two years of its use, when diets were notoriously deficient in carbohydrate and calories, who can gainsay that succeeding statistical investigations will reveal a brighter picture? An analysis of the treatment in these Victory Medal cases will be published, and it is hoped that there will be many other patients to whom the medal can be granted by the Diabetic Fund. Suffice it to say now that thus far the medalists have been patients who have carefully observed treatment, often meticulously, and have had

Read before the Section on Internal Medicine at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 23, 1948.

1. Dolger, H.: Clinical Evolution of Vascular Damage in Diabetes Mellitus, Bull. New York Acad. Med. **22**: 482-483, 1946.

2. Rosenbusch, H.: Prognose und Spätkomplikationen des Diabetes mellitus im Kindesalter, Basel, S. Karger, 1945; Ann. pædiat. **164**: 225 and 281, 1945; **165**: 12, 1945.

3. Chute, A. L.: Survey of Patients with Juvenile Diabetes Mellitus, Am. J. Dis. Child. **75**: 1-10 (Jan.) 1948.

4. White, P., and Waskow, E.: Clinical Pathology of Diabetes in Young Patients, South. M. J. **41**: 561-567, 1948. White, P.: Arteriosclerosis and Diabetes with Onset in Childhood, Proc. Am. Diabetes A., to be published.

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most favorable home surroundings. Boyd and Jackson [5] from Iowa City, with a smaller number of cases but with most detailed studies, found the carefully controlled patient the one most complication free. This thesis for years has been supported by Allen.[6] At any rate, it is evident that diabetes in childhood is not to be a modern Sodom and Gomorrah.

Gangrene is an outstanding complication of arteriosclerosis, and yet, in our series since the period 1922-1929, gangrene as a cause of death has dropped from 8.6 to 1.9 per cent in the period 1944-1948, and that in the face of the fact that the duration of the diabetes had increased five years. Gangrene is only one aspect of sclerotic disease, but is indicative of the condition.

TABLE 1.—*Increasing Duration of Life After Onset of Diabetes by Age Groups at Onset**

| Age at Onset, Years | Naunyn Era, 1898-1914 | Allen Era, 1914-1922 | Banting Era, 1922-1936 | Hagedorn Era, 1937-1943 | Charles H. Best Era, 1944-1948† |
|---|---|---|---|---|---|
| All ages | 4.9 | 6.1 | 9.6 | 12.7 | 14.4 |
| 0-9 | 1.3 | 2.9 | 5.2 | 10.3 | 19.1 |
| 10-19 | 2.7 | 2.7 | 5.5 | 11.1 | 15.4 |
| 20-39 | 4.3 | 4.9 | 12.2 | 17.5 | 18.8 |
| 40-59 | 7.0 | 8.0 | 11.0 | 14.0 | 16.0 |
| 60 and over | 4.4 | 6.4 | 6.6 | 8.9 | 9.1 |

* Diabetic Statistics, George F. Baker Clinic, prepared by the Statistical Bureau of the Metropolitan Life Insurance Company.
† Deaths reported through May 26, 1948.

## A REVISION OF DIABETES STATISTICS AND WHAT IT SUGGESTS

The interpretation of diabetes statistics, cheerful as it is from some points of view, is misleading. It is said that diabetic patients live nearly three times as long now as did diabetic patients in the first fifteen years of this century, fourteen and four-tenths years instead of four and nine-tenths years from the onset of diabetes. That is far below the mark. First of all, this statement is based wholly on fatal cases and takes no account of living diabetic patients. For each patient with onset of disease in childhood who died of the disease (424) in the last fifty years there are 5 alive (2,235). Second, it forces into the diabetes hopper for computing averages all those older diabetic patients who were 62 years or more at onset whose life expectancy without diabetes is fourteen years or less. Moreover, the duration of life in the fatal cases in the first decade of life has now risen to 19.1 years, with similar increases for older persons (table 1). The duration of life of the older diabetic person advances, though far more slowly. In another fashion the improvement is shown by observing the falling percentage of deaths in the first five years of diabetes and the rising percentage for persons who have survived twenty or more years (tables 2 and 3).

Mr. Marks of the Statistical Department of the Metropolitan Life Insurance Company has not yet computed the present expectancy of life of diabetic patients for 1948, but two years ago it was approximately three-fourths that of the general population instead of two-thirds some seven years before. Therefore, in the interpretation of diabetic statistics, one should consider them by decades, with attention to life expectancy as well as fatalities.

## CONTINUOUS SUPERVISION OF DIABETICS

More than 60 per cent (13.8 and 24.5) of my diabetic patients die between the fifth and twentieth year of their diabetes. This demonstrates where the present attack on the disease should be centered, namely, on those diabetic patients who have passed the early stage of the disease. In other words, we must follow up patients more carefully. They must be kept under continual observation. They must be asked to come back every three, four or six months. May I illustrate the necessity for this by a recent chance observation? On one floor of the New England Deaconess Hospital there were 27 diabetic patients. Their average duration of the disease was nine years. Excluding 1 child and 7 adults whose diabetes could be proved to have existed only one year, but which, from their original weights and their present status, undoubtedly must have lasted far longer, the average duration was thirteen years, and in this group the cause of admission was almost without exception gross lack of care. With ward hospital rates at least $9 a day and the shortage of nurses, think of the needless waste of money and of nursing time. This is what strikes me as the pressing problem in diabetes today—the necessity for a more careful follow-up of each patient. One must exercise care in the treatment of the diabetic patient during the entire course of his disease, when it begins and when it ends. What a future the doctor can have who will follow up his cases every few months. It is not so much to specify the frequency of the visits—whether every two, three, four or six months—as for the patient and the doctor to be in partnership, always in contact, the disease to be controlled and all untoward symptoms and signs noted promptly and rectified. I am not extolling now any particular type of treatment, but I am emphasizing the necessity to control the disease and prevent accidents. The life insurance companies will stimulate this follow-up procedure, because when a diabetic person wishes insurance, the physician will be asked how often his condition is checked.

TABLE 2.—*Length of Life After Onset of Diabetes; 9,554 Deceased Patients**

| | Percentage of Total | |
|---|---|---|
| | Less Than 5 Years | 20 or More Years |
| Naunyn, 1898-1914 | 66.8 | 1.8 |
| Allen, 1914-1922 | 55.9 | 3.1 |
| Banting, early, 1922 | 40.7 | 4.8 |
| Banting, late | 22.8 | 9.4 |
| Hagedorn, 1937-1943 | 15.7 | 14.4 |
| Charles H. Best,† 1944-1948 | 13.8 | 24.5 |

* Prepared by the Statistical Bureau of the Metropolitan Life Insurance Company.
† Deaths reported through May 26, 1948.

The diabetic patient's office visit should never be perfunctory and never for diabetes alone. It should include discussion of insulin, diet, exercise and rest, and a complete health examination, and except for the few frequent visits at onset and inauguration of treatment or rectification of some special intercurrent complication, all the clothes should come off. The examination should be so detailed that the patient can see that he is getting his money's worth—treatment

5. Boyd, J. D.: Diet Therapy in the Nephritides and in Diabetes Mellitus During Childhood, J. Pediat. **10:** 243-253, 1937. Boyd, J. D., and Jackson, R. L.: Levels of Control in the Treatment of Diabetes Mellitus, J. A. M. A. **111:** 906-909 (Sept. 3) 1938. Boyd, J. D.; Jackson, R. L., and Allen, J. H.: Avoidance of Degenerative Lesions in Diabetes Mellitus, ibid. **118:** 694-696 (Feb. 28) 1942. Jackson, R. L.: Objectives in the Management of Children with Diabetes Mellitus, Wisconsin M. J. **47:** 587-590, 1948.

6. Allen, F. M.; Stillman, E., and Fitz, R.: Total Dietary Regulation in the Treatment of Diabetes, New York, The Rockefeller Institute for Medical Research, 1919, pp. 573 and 645. Allen, F. M., and Sherrill, J. W.: Clinical Observations with Insulin: Use of Insulin in Diabetic Treatment, J. Metabolic Research **2:** 803-985, 1922. Allen, F. M.: Read before the Lackawanna County Medical Society, May 18, 1948; Pennsylvania M. J., to be published.

of his diabetes and a health examination besides. Only 1.9 per cent of my patients now die of coma, and therefore, when they come to the office, the physician should protect them against the 98 per cent other causes.

### THE MILLION UNKNOWN DIABETIC PERSONS

The Oxford Diabetes Survey [7] demonstrated that for the known diabetic person there was an unknown. How shall the million unknown diabetic persons in the country be recognized? My answer is simple and involves little expense. It is up to the doctor and the diabetic person. The unknown diabetic person is no elusive creature. He is the relative of a diabetic person, and more than 80 per cent of diabetic persons are fat. To find him or her all that is required is that 140,000 doctors examine the blood and urine of the relatives of their diabetic patients, especially those who are fat and above the age of 25 years, or have their patients screen the relatives by doing urine tests. This narrows the problem. Only one third of the people in the country are over 40, and yet persons above 40 constitute two thirds of the diabetic patients. It is infinitely cheaper to get that message across to the doctors and the patients than to attempt a multitude of expensive surveys, now that the United States Public Health Service has so beautifully blazed the way. If we doctors fail to do it, state medicine will, and the doctors will lose the fees and be taxed to pay the bill. In this search, already the specialists are aiding internists by detecting cases and dentists and chiropodists are constantly discovering suspects.

Many diabetic surveys, however, are still needed. We should know the percentage of diabetes among blind persons and among those with cataracts. In Arizona I found diabetes as frequent among the Indians as in the rest of the population, when one considered their sex, age, accessibility to medical attention and statistical tabulation. How does the incidence of diabetes in Iceland with its divergent diet and hours of daylight compare with that in the United States when evaluated under similar conditions and similar methods? What is the incidence of diabetes in Guam, where arteriosclerosis is said to be almost nonexistent? We know that diabetes differs little in frequency between the Negroes and whites, if the blood and urine are tested. How is it in China? There are certainly diabetic Chinese in the United States. I see a large number. There were only 74,954 Chinese in the country in 1930, and in 1940 there were 2,513 in Massachusetts and 1,380 in Boston. By a survey of these it should be easy to learn how many are diabetic, and the data thus acquired could be applied to China as a whole.

TABLE 3.—*Causes of Death of 9,554 Diabetic Patients**

| | Naunyn Era, 1898-1914 Per-centage | Allen Era, 1914-1922 Per-centage | Banting Era, 1922-1936 Per-centage | Hagedorn Era, 1937-1943 Per-centage | Chas. H. Best Era, 1914-1948† Per-centage |
|---|---|---|---|---|---|
| Coma present | 63.8 | 41.5 | 8.4 | 3.2 | 1.9 |
| Coma absent | | | | | |
| 1. Cardiorenal-vascular | | | | | |
| (*a*) Arteriosclerotic | 17.5 | 24.3 | 53.8 | 64.8 | 69.1 |
| (*b*) Nonarteriosclerotic | 0 | 0.4 | 0.4 | 0.3 | 0.9 |
| 2. Infections | 7.4 | 12.7 | 13.7 | 11.0 | 7.5 |
| 3. Cancer | 1.5 | 3.8 | 8.7 | 8.8 | 8.6 |
| 4. Tuberculosis | 4.9 | 4.9 | 4.2 | 2.5 | 2.0 |
| 5. Other causes | 4.9 | 12.4 | 10.8 | 9.3 | 9.8 |

* Prepared by the Statistical Bureau of the Metropolitan Life Insurance Company.
† Deaths reported through May 26, 1948.

In any study of the incidence of diabetes the data in table 4, compiled by the Statistical Department of the Metropolitan Life Insurance Company from the house to house canvass in the National Health Survey, 1935-1936,[8] should be borne in mind. Everyone concedes its inaccuracies, because it is not based on chemical analyses of urine and blood but on oral reports; yet until a better report is forthcoming, it shows that the age and sex of the population surveyed are important factors for a correct interpretation.

### DIET

Great advances have been and are being made. Few physicians advocate less than 150 Gm. of carbohydrate in twenty-four hours, and one would administer insulin if such an amount could not be tolerated without the occurrence of glycosuria and hyperglycemia. No one recommends that a diabetic person should become obese. The disease developed in Houssay's [9] toads, which were made susceptible to diabetes with alloxan, if all their food was given at one meal, but the diabetes did not develop in the toads when the same quantity of food was spread throughout the twenty-four hours. Groen's [10] normal dogs died if fed fat bacon exclusively. There is room here for many dietary modifications, and time will show which is the best.

### INSULIN

Insulin has made possible the improvement in diabetic treatment.[11] The 10 year old children in 1897-1913 had a mortality rate of 824 per thousand in a year, and this has dropped in 1939-1945 by 99 per cent. The 30 year old patients had a yearly mortality rate of 359 per thousand, and this has fallen by 97 per cent. Even the 50 year old and 60 year old groups show reduction in death rate of 75 per cent and 72 per cent, respectively. With such startling improvement in the quarter century since insulin was discovered, one wonders why it is not used more. I believe that at least 85 per cent of the diabetic patients at the New England Deaconess Hospital take it. Over and over again in our medical-surgical rounds at the hospital on Monday mornings, promptly at 8 a. m. (to which all are invited), it is asked, "Must a diabetic patient get coma or gangrene or become blind or pregnant, get a stroke or have an insurance examination before his or her diabetes is recognized and insulin started?"

TABLE 4.—*Ratio of Diabetes in the Population**

| Age | Male Patients | Female Patients |
|---|---|---|
| 0-14 | 1:2500 | 1:2500 |
| 15-24 | 1:1700 | 1:1700 |
| 25-34 | 1:1100 | 1: 900 |
| 35-44 | 1: 500 | 1: 300 |
| 45-54 | 1: 225 | 1: 125 |
| 55-64 | 1: 100 | 1: 50 |
| 65 and over | 1: 70 | 1: 45 |

* The magnitude of the Chronic Disease Problem in the United States, Division of Public Health Methods, National Institute of Health, United States Public Health Service, 1938.

Every few years there is an improvement in insulin, and surely all possible improvements have not yet been made. I have high hopes for the new modified protamine zinc insulin (NPH50) which we shall test

7. Wilkerson, H. L. C., and Krall, L. P.: Diabetes in a New England Town, J. A. M. A. **135:** 209-216 (Sept. 27) 1947.

8. The Magnitude of the Chronic Disease Problem in the United States, Division of Public Health Methods, National Institute of Health, United States Public Health Service, 1938.

9. Houssay, B. A., and Martinez, C.: Experimental Diabetes and Diet, Science **105:** 548-549, 1947.

10. Groen, J.: An Experimental Syndrome of Fatty Liver, Uric Acid Kidney Stone and Acute Pancreatic Necrosis Produced in Dogs by Exclusive Feeding of Bacon, Science **107:** 425-426, 1948.

11. Longer Life for Diabetics, Statist. Bull. Metrop. Life Insur. Co. **28:** 5-6, 1947.

in our diabetic camps this summer, because it is supposed to combine in one bottle the advantages of a short-acting and long-acting insulin. At present patients with diabetes of long duration are apt to take the regular insulin and protamine zinc insulin by separate injection in the morning and, if the condition is severe, often 4, 6 or 8 units before the evening meal.

Reactions should be avoided; but if a patient occasionally does not have a sign of a reaction, would that indicate that his diabetes is well controlled? For some patients 3 to 5 Gm. of carbohydrate hourly is essential for safety, and it is easily supplemented with protein and fat. For those driving an automobile food should be taken every two hours, and even though the patient may not be driving a 10 ton truck he should act as if he had that responsibility.

Would not every doctor keep his patient sugar free the entire twenty-four hours if he could do so without exposure to an insulin reaction? I tremble for the patient who is told that he may omit insulin. Before I advise that a patient omit it in the future, I shall insist that he sign his name to a statement that he has been advised, as long as he lives, to test his urine after a meal and have a blood sugar test every three months.

### DIABETIC COMA

At the Massachusetts General Hospital, Dr. Reed Harwood told me recently, there has been no death in the last 41 cases of diabetic coma. At the New England Deaconess Hospital on our service we have just completed a series of 92 successive cases also without a death, making a total in the two institutions of 133 cases without fatality. There is no boasting in these results. They are simply facts, and the reasons are plain. In our group the results are in large measure due to the cooperation of physicians within 50 miles of the hospital who in nearly half of a large series of patients with coma administered insulin just before the patient was put into the ambulance for a quick ride to the hospital. We know that our patients, in a previous but also recent survey, receiving practically the same amount of insulin in three hours as they did in twelve hours formerly, showed a mortality rate of 1.4 instead of 14 per cent. Liberal doses of insulin, promptly administered, prevent deaths from coma. We consider diabetic coma to be a grave emergency; the resources of the laboratory and the staff, young and old, are marshaled for its relief.

Our method of treatment of diabetic coma is herein outlined.

## TREATMENT OF DIABETIC COMA

### First Hour After Admission

Assign special nurse, experienced in coma treatment, for the first few hours.

#### LABORATORY

1. *Urine.*—Examine for sugar, diacetic acid, albumin, coma casts and pyuria. Catheterize if necessary.

2. *Blood.*—Test for sugar and carbon dioxide content, with emergency report inside the hour. White blood cell count and nonprotein nitrogen also of value.

3. *Search for Complications*
   - A. History to explain cause of coma
   - B. Physical examination, noting particularly:
     - (*a*) State of consciousness, type of respiration, pulse rate, blood pressure and rectal temperature
     - (*b*) Look for soft eyeballs, dry tongue, dilated stomach, cold and mottled skin and impacted rectum.

4. *Insulin.*—100 units of crystalline insulin subcutaneously at once for adults, if blood sugar exceeds 300 mg. per 100 cc. and if the blood carbon dioxide content is 9 millimols per liter (20 volumes per hundred) or less. The dose would be proportionately less in cases of recent onset of diabetes or in young children. In cases with blood sugar between 600 and 1,000 mg., give 200 units additional, and with blood sugar over 1,000 mg., give 300 units additional. In patients in circulatory collapse, give preliminary additional doses of insulin intravenously.

5. *Gastric Lavage.*—Use large tube, aspirate completely and wash stomach with warm water with greatest care.

6. *Sodium Chloride.*—Give 2,000 cc. of isotonic sodium chloride solution intravenously and repeat if indicated by dehydration and blood pressure below 90 mm. of mercury. Avoid too rapid administration, especially in older patients.

7. *Warmth.*—Keep patient warm, yet avoid burns, as from hot water bottle.

### Second to Sixth Hour

Occasionally the gravity of the condition necessitates repetition of first hour's total insulin in the second hour.

8. *Tests.*—Repeat blood sugar and carbon dioxide determinations after three hours. For rising blood sugar give insulin 50 to 200 units, according to physician's judgment of prognosis.

9. *Fluids by Mouth.*—As soon as tolerated give 100 to 120 cc. per hour of broth, ginger ale, orange juice, tea or coffee, to be sipped by patient or spooned by nurse. If nausea and vomiting recur, withhold fluids orally for twelve hours (lavage stomach again if indicated) and then resume.

10. *Soft Food.*—Soft or liquid food such as oatmeal gruel, orange juice or milk diluted half and half with lime water, not to exceed 10 Gm. carbohydrate per hour.

11. *Enema.*—For cleansing and to relieve abdominal distension.

12. *Blood Pressure, Pulse and Temperature.*—Record blood pressure, pulse and temperature; note signs of improvement or the reverse.

13. *Urinalysis.*—Urinalysis for sugar and diacetic acid every hour. Record volumes.

### Sixth to Twenty-Fourth Hour

14. *Tests.*—Repeat blood sugar and carbon dioxide determinations and give insulin, 50 to 200 units, if blood sugar and carbon dioxide levels are not improving.

Insulin (crystalline) may now be given according to results of urine tests every one to four hours if fall in blood sugar has been satisfactory.

| If test is— | Red | Orange | Yellow | Green | Blue | |
|---|---|---|---|---|---|---|
| Give— | 20 | 16 | 12 | 0 | 0 | units |

15. *Urinary Output.*—Observe this closely and note with alarm any sign of anuria. Treat with 1,500 cc. of isotonic sodium chloride solution intravenously if shock is persisting. Repeat as necessary. For anuria, associated with hypochloremia, give 50 cc. of 10 per cent sodium chloride solution intravenously. Never give hypertonic dextrose solution to promote diuresis. Beware of producing excessive diuresis with consequent loss of base, especially of potassium.

### Second Day

16. *Soft Food.*—Diet: carbohydrate 100 to 150 Gm., protein 50 Gm. and fat 50 Gm.

17. *Protamine Zinc Insulin.*—Protamine zinc insulin should be given, supplemented by crystalline insulin in small to moderate doses before meals, as indicated by results of blood sugar and urine tests.

### Third Day

18. *Diet.*—Patient should gradually return to the standard diabetic diet for age and weight with carbohydrate 150 to 200 Gm., protein 60 to 100 Gm. and fat 60 to 120 Gm. daily.

As there have been no deaths in the last 92 cases, I see no reason to change the method of treatment. Particularly I would call attention to its simplicity, the absence of use of dextrose or alkalis. Thus far the employment of potassium has not been necessary, and, in fact, until patients with diabetic coma treated without dextrose have been shown to need it, I hesitate to give advice for its use except in those clinics where quick tests for potassium are available.

### TRANSMETATARSAL OPERATIONS

Several lessons are to be learned from the unpublished report of my colleague, Howard F. Root,[12] on one hundred and seventy transmetatarsal operations on our diabetic patients apart from the excellent results which the surgeons Drs. Leland and John McKittrick, Dr. Theodore Pratt and Dr. Clifford Franseen have obtained. Six out of seven operations have been successful, and in many of the cases this type of operation has saved an amputation above the knee and at the same time produced a useful foot. The duration of the diabetes was nine years in the male patients between 51 and 60 years of age and fifteen years for the female patients between 71 and 80 years. The duration was ten years in the cases of successful treatment and fourteen years in the cases in which treatment failed. In the 6 patients under 51 years of age the average duration was fourteen years. Dr. Root concluded, "1. Mildness of the diabetes is no protection against gangrene. 2. Instruction in the care of minor lesions must be repeated. Do not walk on a sore toe. 3. The insensitive foot is the most dangerous and least resistant to infection. Lack of pain leads to procrastination eventually preventing the use of conservative treatment and conservative operation."

This group of cases stands out as composed of cases of mild diabetes of long duration in patients who had formerly been extremely obese. In 22 cases the average maximum weight was 245 pounds (111 Kg.); in 52, 208 pounds (94 Kg.), and in 50, 170 pounds (77 Kg.). In only 4 cases was the maximum weight under 150 pounds (68 Kg.). Only 13 of the patients had been on a measured diet and even on that for a small part of their diabetic lives. Likewise, there was a comparatively long period during which diabetes had existed without treatment by means of insulin. Glycosuria and hyperglycemia were not only present at admission but had probably been present long before the occurrence and development of the lesion which brought about admission to the hospital.

An average of 31 units of insulin as a maximum and 17 at discharge and 164 Gm. of carbohydrate with 1,764 calories were given the 111 patients for whom treatment was successful and 48 and 24 units, respectively, and 159 Gm. of carbohydrate and 1,652 calories to the 22 patients for whom treatment failed.

### CANCER

What recently gave me satisfaction in a review of a series of cases of cancer among our diabetic patients was the number who were either cured by operation or lived so long that death finally occurred from another cause. Perhaps statisticians of cancer mortality are observing this right along. It is what one ought to expect. Diabetic patients are constantly undergoing health examinations, and their doctors, therefore, should diagnose their cancers early. I hope that this avenue of investigation will appeal to the cancer seekers and that they will see the advantage of concentrating on diabetic patients so as to learn how treatment will be most efficacious in the earliest stages and from diabetic patients get cheer for other cancer sufferers.

Cancer as a cause of death has increased from 1.5 per cent in 1898-1914 to 8.6 per cent in 1944-1948. It is little more than half the cancer mortality rate, 15.8, for white persons ages 45 and over in the United States, but, as in nondiabetic persons, stands next to arteriosclerosis as a cause of death. Undoubtedly it would be higher than 8.6 per cent if diabetic persons lived longer.

12. Root, H. F.: Factors Influencing Success in Transmetatarsal Amputations in Diabetes, New England J. Med. **239**: 453-458, 1948.

### EDUCATION AND HOSPITAL CARE

Education of the diabetic person is a *sine qua non* in any method of treatment. Doctors cannot take over another million diabetic persons for instruction, however, unless they revise their methods. Most of the cases are office cases, and the time taken to explain all the ins and outs of diabetes is too great. We doctors must bring into our offices helpers whose medical training has been far less expensive and time-consuming than our own. Nurses and dietitians are not available at the prices the patients are able to pay. Therefore, we must turn to nurses' aides of one description or another. Instruction the patient must have.

Similarly we must have cheaper accommodations for those ambulatory patients who need introduction to diabetic treatment or its revision from time to time. With rising hospital costs, hospitals should grasp the point that systematization and a better classification of their admissions would lower the costs both for the patient and the public who voluntarily or by taxation are saddled with the bills. I expect to see this idea spread rapidly with mounting hospital deficits and decreasing revenues from community drives.

There are at least 15,000 diabetic children in the United States and 100,000 living persons the onset of whose diabetes was in childhood. Yet (shame on us) as yet only 1 child in 20 has an opportunity to go to a diabetes camp, where children get more benefit from their stay and are better treated than in a hospital ward.

### DIABETES FUNDS

In the talks I give my diabetic patients, I always tell them to see to it that the hospital nearest them is equipped to care for them in an emergency. A blood sugar report for the unconscious patient is just as valuable to him on Sunday afternoon as on any week day. The hospital will permit a woman to have a baby and recognize its duty to care for her and it on any day of the week, and the same rule should hold for an urgent diabetic admission.

The diabetic person having provided for his own safety, then I believe it is to his advantage to contribute to the furtherance of diabetic treatment and the promotion of research. Of course, if his own community is not enterprising enough to have a diabetes fund, how can I help telling about our own? A diabetic who will give a dollar a year for treatment and research in diabetes will be a better patient, and there are 1,000,000 known diabetic patients in the country. Finally, $1 from 1,000 diabetic persons is better than $1,000 from 1, because the thousand dollar donor may die, but most of the 1,000 diabetic dollar donors will live long and continue to manifest an interest in their disease.

### BLOOD SUGAR

A $5 charge for a blood sugar test is a dreadful deterrent to good treatment. One may not need many tests, but occasionally they are most revealing and reassuring. If the blood sugar test is combined with a medical visit and advice, that, of course, is a different matter. I think that laboratories should sell blood sugar books and blood sugar tests wholesale or establish bargain blood sugar test days or hours, so that patients are stimulated, encouraged and even enticed into knowing the more exact status of their diabetes—in fact, to

better its control. The controlled diabetic person escapes diabetic coma and avoids many needless and embarrassing pitfalls.

### DIABETES AND EPILEPSY

In a recent review course of instruction in neurology which I was taking, I was much impressed by the analogies between diabetes and epilepsy. Indeed, epilepsy is constantly presenting itself in the differential diagnosis when an insulin reaction occurs, and, indeed, the incidence of epilepsy is greater in diabetic than in nondiabetic persons. It is said that there are 1,000,000 known diabetic persons and estimated that there are 1,000,000 unknown. The guess is made that there are 800,000 known epileptic persons and a corresponding number whose condition is undiagnosed. Treatment of epilepsy has notably improved with the use of phenobarbital diphenylhydantoin sodium ("dilantin") and trimethadione ("tridione"), but the specialists say that following up the treatment of the disease in routine visits yields astonishingly better results than simply dispensing the medication. Good old-fashioned doctoring of the whole condition of the patient and not of the episodes of grand mal alone, I understand, may lessen the latter toward the vanishing point. Nowadays I suppose that this would be called psychosomatic medicine, but truly that should always form a part of the day's work for the doctor. It is sort of thrown in "without money and without price." The family doctor is the doctor *par excellence* for epileptic and diabetic patients, and he should be made to feel it and help in the technics of treatment. In fact, any student who thinks that he wants to become a diabetes specialist should remember that today only 1.9 per cent of the diabetic patients die of their disease and therefore he must be up to date in 98.1 per cent general medicine if he expects to give his patients adequate care.

### PREGNANCY

Diabetic women may want to become pregnant, and if their husbands are nondiabetic and come from nondiabetic or only slightly diabetic families we have no right to interfere. But all will agree that they must keep under close supervision. Moreover, if, as Dr. Priscilla White [5] has shown, only 1 in 4 or 5 with calcified pelvic arteries can give birth to a living and healthy infant, it is only fair that the mother and father should be warned in advance of conception.

### URIC ACID DIABETES

I have always believed in the importance of alloxan diabetes as a great step forward in the elucidation of the disease. Alloxan can be made out of uric acid, which we all have in abundance. Bailey, Bailey and Leech [13] in our laboratory have shown that when alloxan is given to a rabbit the level of glutathione, another component of the body, falls. The two appeared antagonistic. By giving glutathione they hoped to offset the diabetogenic action of alloxan. This they were unable to do, but Lazarow [14] of Cleveland accomplished it. Naturally, therefore, I was greatly pleased to see the announcement of Dr. Mervyn Griffiths [15] of Canberra, Australia. He reported that blood glutathione can be reduced to very low levels by feeding rabbits a diet deficient in cystine and methionine. After six or seven weeks of such a diet the glutathione is at approximately one half its previous level. If uric acid is then injected intraperitoneally hyperglycemia and glycosuria develop in the rabbit, which last for five or six days, and this he terms uric acid diabetes. Control rabbits given uric acid failed to show these changes when the blood glutathione was not first decreased. The pathologic aspect of uric acid diabetes has not yet been reported. To this brief publication, only two pages in length, I attach great significance, even though it is based on experiments with only 4 rabbits. All of us have uric acid and glutathione in our bodies. Suppose that diabetic patients had adequate supplies of glutathione, would their disease advance less rapidly; could we in this way protect their relatives? The possibilities suggested by this announcement are unique, provocative and stimulating. Even if it is not glutathione, there might be some other chemical which could be employed which would deter some substance like uric acid from yielding alloxan or a product akin to it. Hitherto to escape diabetes one had to shun a diabetic heredity or obesity, but now an entirely new avenue for investigation is opened. Would it not be wonderful if something should come of it? At any rate, I predict that the treatment and methods of prevention of diabetes will change radically in the next few years. I believe that we are on the threshold of a new discovery, and I hope to live to see it.

13. Bailey, C. C.; Bailey, O. T., and Leach, R.: Alloxan Diabetes, Proc. Am. Diabetes A. **6**: 375-393, 1946.
14. Lazarow, A.: Protective Effect of Glutathione and Cysteine Against Alloxan Diabetes in Rats, Proc. Soc. Exper. Biol. & Med. **61**: 441-447, 1946.
15. Griffiths, M.: Uric Acid Diabetes, J. Biol. Chem. **172**: 853-854, 1948.

## ABSTRACT OF DISCUSSION

Dr. W. Wallace Dyek, Philadelphia: Over the years, we have looked to Dr. Joslin and his group to lead the way in the furtherance of the diabetic patient's welfare. As the physiologist, the biochemist, the biologist and allied scientists have prepared the missiles, Dr. Joslin has helped set our sights, and today's communication is no exception. A million new diabetic persons to be discovered and started on treatment! This is certainly a challenge. I share Dr. Joslin's restricted optimism of avoidance of premature arteriosclerotic change in some of the long term juvenile diabetic patients. I cannot give a report as yet, but the department of ophthalmology at the University of Pennsylvania is engaged in reviewing cases of diabetes of twenty to twenty-five years' duration. I can only say now that my personal impression is that for the most part those patients who have been best controlled over the years have the least vascular damage. Until more convincing evidence is available than has been presented hitherto, I shall attempt in each patient to obtain normal blood sugar values throughout the twenty-four hours and to maintain a twenty-four hour negative reaction for sugar in the urine. Obviously, I do not secure this type of control in all of my patients, but an occasional failure due to my own inadequacies or the patient's lack of cooperation is no excuse for not trying. I am afraid that I cannot agree with Dr. Joslin that coma deaths have approached the vanishing point. That is not my experience on Dr. Dillon's service at the Philadelphia General Hospital. In my conversation with many of you during your visits to the booth, I gather that you too are still having coma deaths and they continue to represent a sizable part of your total diabetic mortality. No doubt, some of these deaths can be prevented by earlier diagnosis and earlier adequate treatment. In the severe coma patient especially, adequate treatment now includes administration of potassium controlled by the electrocardiogram as described by Bellet and Nadler recently in Philadelphia. The fact that in Dr. Joslin's cases 60 per cent of the deaths occur in the cases in which the diabetes has been of five to twenty years' duration emphasizes a point which we are all too likely to forget, namely, the diabetic needs continuous follow-up and supervision. It has been my experience that the new diabetic patient starts off with a great deal of enthusiasm and honest desire to maintain his diabetic regimen. As time moves on, he slips a little and gradually strays far

afield. If the physician is present constantly to keep him on the track after the initial enthusiasm wears off, the broom will continue to sweep clean after it is no longer new.

DR. HENRY T. RICKETTS, Chicago: Dr. Joslin suggested that efforts to discover the cause of arteriosclerosis in diabetes may provide clues to the mystery of arteriosclerosis in general. While this may prove to be true, one should bear in mind that there are certain important differences between the total vascular picture in diabetes and that in senescence. Both conditions lead to changes in the arteries, but only diabetes damages the capillaries of the retina and the kidneys, likewise the retinal veins, in an almost specific way. Although one may produce sclerosis of the arteries in animals, as for example by feeding cholesterol, the peculiarly diabetic lesions of the capillaries and veins have not been produced by any experimental method. Dr. Joslin also referred to several papers describing the high incidence of serious vascular complications in young or middle-aged diabetic persons, originally "juvenile" diabetic persons, who have had their disease for twenty to twenty-five years. It is often stated that such complications occur regardless of the degree of control of glycosuria. This statement is difficult to support with factual evidence, for one cannot know with certainty the day to day level of control in patients whom one sees only once in one to six months, even though on the days one does seen them all seems well. The fact that Dr. Priscilla White has found vascular lesions in 93 per cent of her juvenile cases of long standing should in itself arouse our suspicion that poor control is a factor; it is notorious that the vast majority of these young unstable patients cannot be kept free of glycosuria for any considerable period of time. The future may prove that hyperglycemia and hyperlipemia play no role in these degenerative phenomena, but the evidence available today does not justify our discarding the possibility that these factors are important, and we should treat our patients accordingly.

DR. FREDERICK M. ALLEN, New York: The maintenance of a normal level of blood sugar, which I was first to advocate, has been made easier by the discovery of insulin. By this method diabetic complications are preventable. For "furtherance of diabetic treatment," nobody typifies better than Dr. Joslin the value of individual personality, inspiration and initiative, in contrast to regimentation. Clinical evils have resulted when a college, which is necessarily a self-contained oligarchy, oversteps its educational function by usurping control of medical services for large populations. Diabetes furnishes one test of whether advances occur because of oligarchy or in spite of it. From a review of the overbalanced fat and carbohydrate diets, the recent deadly doctrine of leaving diabetes uncontrolled and the lax intermediate standards, it appears that the large institutions have been inferior not only to Joslin's clinic but to other smaller clinics or private practitioners in demonstrating successful prolonged control. In the related field of hypertension, which enters as a complication in many cases, especially among elderly diabetic patients, the oligarchic suppression of the treatment by salt restriction has likewise been responsible for a large unnecessary mortality rate during a quarter-century. Physicians should test for themselves the validity of the principle in both diseases; namely, that thorough physiologic control, especially in early stages, averts the later hopeless consequences.

DR. JOSLIN: I appreciate all the words of those who have discussed the paper. We can take to heart what each one has said. The general unanimity about controlling diabetes, I think, is strengthened. We look to Dr. Ricketts for further studies in arteriosclerosis and to Dr. Dyer, because in Philadelphia now so many investigations of a new nature are going on in diabetic trauma. We are particularly fortunate, I think, in our coma cases. Our patients are certainly not as bad as those who come to many general hospitals. We know that, but I think that it is significant that at the Massachusetts General Hospital improvement has recently been striking. I would welcome hearing of patients free from degenerative vascular lesions after twenty-five years of diabetes, because, if we can find them and then see how they have lived, we could learn how to protect others. A question was put to me about the special insulin. I think that I will not discuss that, because all insulins are good. We could use any insulin. I treated diabetes for twenty-five years without it. I know what diabetes is without it and how thankful I would be for any insulin. The point is to use the insulin which you have and use it wisely and control the disease to the best of your ability.

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## OFFICIAL SYRINGE OF THE AMERICAN DIABETES ASSOCIATION

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Seattle
and
FRANKLIN B. PECK, M.D.
Indianapolis

In 1943 the Council of the American Diabetes Association appointed the Committee for Standardization of the Insulin Syringe. The need for this action by the Council arose from the following facts. After the discovery of insulin in 1921, and its use by the profession in the treatment of diabetes became general in 1923, many different types of syringes for the administration of insulin gradually appeared on the market. Each of these syringes was considered by the originator of each of the various designs to have certain advantages over any of those previously available. The number of different types increased until literally dozens of different models were being manufactured.

In general, the different syringes were of two types—those which carried graduations indicating various fractions of a cubic centimeter and those which carried graduations indicating the number of units.

Early in its history insulin was marketed in dilutions as low as 5 units per cubic centimeter, and later as high as 100 units per cubic centimeter. Those syringes which carried scales indicating fractions of a cubic centimeter used fractions varying from $\frac{1}{100}$ to $\frac{1}{4}$ cc. The most commonly used fraction was $\frac{1}{10}$ cc. The capacity of the syringes with this type of scale was most often 1 cc., but some had a 1.5 cc. and some a 2 cc. capacity. Some of these syringes showed the fractionation markings numbered numerically, and on some syringes the graduations of the scale were indicated in fractions of a cubic centimeter. These various types of scales were considered to have the advantage of being usable for whatever strength of insulin solution was being currently employed.

The other type of scale or marking indicated the dosage in terms of units. It was at first considered necessary to have a syringe scaled for each different strength of insulin, so that for a time when 10, 20 and 40 U. S. P. units per cubic centimeter were the available strengths of insulin, there were three different syringes with this type of scale on the market. It then seemed to be more economical to place several scales for the different strengths of insulin on the same syringe. As a result of this policy, there were syringes with as many as three different scales on each syringe. Later, when 80 unit insulin became available, and 10 unit insulin was withdrawn from the market, the two most commonly seen syringes of this type carried two scales on each syringe—either scales for 20 and 40 U. S. P. units per cubic centimeter or a second combination, scales for 40 and 80 U. S. P. units per cubic centimeter.

Various modifications in the kind and color of glass, such as green glass and blue plungers, were employed.

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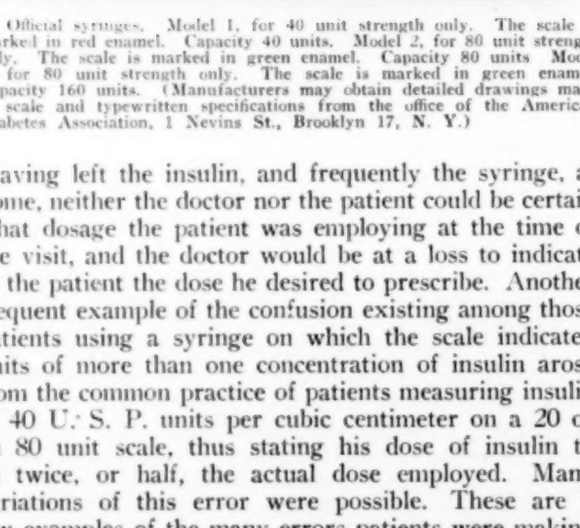
The Committee of the American Diabetes Association for Standardization of the Insulin Syringe.

In addition to the short standard length (usually 3 inches [7.6 cm.]) of syringe barrel, the longer, slender type of barrel was manufactured, similar in dimension to the "tuberculin" syringe.

This multitude of different kinds of syringes employed in measuring the dosage and in the administration of insulin was steadily increasing in numbers through applied individual ingenuity, when the Committee for Standardization of the Insulin Syringe was created in 1943. Such action was considered necessary by the Council of the American Diabetes Association because of tremendous confusion among the users of insulin regarding the measurement of prescribed insulin dosage. A few examples of such confusion will be cited. A patient employing a syringe with 1/10 cc. graduations, the graduations being numbered from 1 to 10, would frequently state his dose of insulin in units as the number of the fractionation mark, regardless of the strength of insulin being employed, so that 5 units might mean anything from 5 units to 40 units of insulin. When the scale was marked in fractions of a cubic centimeter, the patient often spoke of his dosage in terms of fractions instead of in units and frequently could not recall just what strength of insulin he used.




Official syringes. Model 1, for 40 unit strength only. The scale is marked in red enamel. Capacity 40 units. Model 2, for 80 unit strength only. The scale is marked in green enamel. Capacity 80 units Model 3, for 80 unit strength only. The scale is marked in green enamel. Capacity 160 units. (Manufacturers may obtain detailed drawings made to scale and typewritten specifications from the office of the American Diabetes Association, 1 Nevins St., Brooklyn 17, N. Y.)

Having left the insulin, and frequently the syringe, at home, neither the doctor nor the patient could be certain what dosage the patient was employing at the time of the visit, and the doctor would be at a loss to indicate to the patient the dose he desired to prescribe. Another frequent example of the confusion existing among those patients using a syringe on which the scale indicated units of more than one concentration of insulin arose from the common practice of patients measuring insulin of 40 U. S. P. units per cubic centimeter on a 20 or an 80 unit scale, thus stating his dose of insulin to be twice, or half, the actual dose employed. Many variations of this error were possible. These are a few examples of the many errors patients were making and are still making, because of the great variety of insulin syringes still available on the market.

Some physicians, acutely conscious of the many possible errors, attempted to minimize such errors by insisting that the patient bring with him, when visiting his doctor, both his syringe and his bottle of insulin. This gave the physician the opportunity to check under actual observation the dose of insulin being employed by the patient and also to demonstrate to the patient the actual dose of insulin which he prescribed.

Manufacturers were also dissatisfied with the many varieties of insulin syringes that it was necessary for them to create and to detail to the trade. Retail outlets were obliged to attempt to carry in stock a varying but large number of the different kinds of insulin syringes.

Patients taught to use insulin in one diabetes clinic or hospital, or by their personal physician, frequently found it impossible to replace a broken syringe with a similar one, because they were distant from the site of original purchase. They were then obliged to buy a syringe of another type, with which they were not familiar, and to accept the advice of some uninformed clerk or other person as to how to measure the prescribed dose of insulin on a new and unfamiliar syringe. Of course, there were some persons, whose minds were sufficiently mathematical and whose knowledge of the different strengths of insulin solution was adequate, who could compute their dose properly even on a syringe with which they had had no previous experience. The majority of patients, however, were not so mathematically minded, and hence a tremendous amount of confusion resulted.

The clinical results of this confusion led to poor treatment, varying from poor control of the diabetes, or even varying degrees of acidosis, to severe and even dangerous insulin shock.

Sufficient has been said to give the history of the insulin syringe and to emphasize the confusion and dangers arising from the great number of kinds and types of insulin syringes which had appeared on the market by 1943. It is probably safe to say that the number of models has increased considerably during the past five years. The Committee for Standardization of the Insulin Syringe presented on many occasions to the Council of the American Diabetes Association suggestions and recommendations for a standard type of syringe which could receive the approval and endorsement of the American Diabetes Association and thereby be considered "the official insulin syringe." Finally, in June 1947, the details and specifications of "the official insulin syringe," approved and endorsed by the American Diabetes Association, was accepted by the Council.

## DESCRIPTION OF MODELS

There will be three models of the official syringe.

*Model 1.*—Model 1 is to be used for insulin of 40 U. S. P. units per cubic centimeter of any kind (that is, regular insulin, insulin made from zinc, insulin crystals or protamine zinc insulin). It will have only one scale, reading 10, 20, 30 and up to 40 units, with suitable subdivisions, and will have a total capacity of 1 cc., or 40 units. The numerals and division lines on the scale will appear in red enamel, corresponding to the red color scheme officially adopted for the labeling and identification of all kinds of 40 unit strength insulin. This syringe should not be used for any strength of insulin except 40 units. This last designation will appear on the syringe.

*Model 2.*—Model 2 is to be used for 80 unit strength insulin of any kind. It will have only one scale, reading 20, 40, 60 and up to 80 units, with suitable subdivisions, and will have a total capacity of 1 cc., or 80 units. The numerals and division lines on the scale will appear in green enamel, corresponding to the green color scheme used to identify all kinds of 80 unit strength insulin. This syringe should not be used for any strength of insulin except 80 U. S. P. units per cubic

centimeter. This latter designation will appear on the syringe.

*Model 3.*—Model 3 may be used for the measurement of 80 unit strength insulin of any kind, but is designed particularly for patients who need to use more than 80 units of insulin. It will have only one scale, reading 20, 40, 60, 80 and so forth, up to a total of 160 units and will have a total capacity of 2 cc., or 160 units. The numerals and division lines on the scale will appear in green enamel. This syringe should be used only for measuring a dose of 80 unit strength insulin and is necessary only when the dose of insulin exceeds 80 units. The syringes of 1 cc. capacity will have an approximate over-all measurement of 3 inches (7.6 cm.). The one syringe of 2 cc. capacity will have an over-all measurement of a little over 4 inches (over 10 cm.). Some manufacturers may choose to create official syringes which are more slender and hence longer than indicated herein. However, to be official the designated scale, the designated capacity and the color scheme must conform to the aforementioned specifications.

The label on the box containing the syringe is described as follows: Each syringe will be packaged separately in an appropriate box. The paper label on the outside of the box will carry the designation of the name of the manufacturer of the syringe along with the other data. The designation "For use with insulin of 40 unit strength only" will appear in red ink on the label on the box for the 40 unit strength syringe, and the designation "For use with insulin of 80 unit strength only" will appear in green ink on the label on the box for the 80 unit strength syringe. On the labels on the boxes containing any of these approved syringes which meet these requirements regarding the color and scale markings will appear this statement, "The enclosed syringe has a simplified scale which has been approved by the American Diabetes Association." By means of this description and by giving attention to the label on the box containing the syringe and the nature of the scale, a diabetic person should be able to obtain this officially approved insulin syringe by asking for it by name at any drug store where he seeks to make a purchase.

It is the sincere hope of the American Diabetes Association (1) that manufacturers of syringes for the administration of insulin will welcome this official syringe and will as rapidly as practical eliminate from their lines all other "insulin syringes" and restrict their production to this "official insulin syringe," (2) that manufacturers will publicize and promote to their retail outlets the advantages of this new syringe and its endorsement by the American Diabetes Association, (3) that the National Retail and Wholesale Druggists Associations, and their subsidiary state, district and other territorial organizations, will promote to insulin users this syringe to the exclusion of all other types and kinds of insulin syringes, (4) that teaching diabetes clinics and hospitals and all individual physicians will support the endorsement by the American Diabetes Association of this new insulin syringe by employing only this official syringe in teaching new users of insulin and will as rapidly as practical change the syringe used by persons under their direction to the official insulin syringe.

It is sincerely believed that such a cooperative attitude on the part of all those concerned with this problem will present to the diabetic public of America a united attitude and thereby cause much of the confusion and danger of the past to disappear.

## RELATIONSHIP OF THE ANESTHESIOLOGIST TO THE HOSPITAL

JAMES RAGLAN MILLER, M.D.
Hartford, Conn.

In opera it is customary for the composer to begin with an overture. Though it appears first, this overture is written last, for it serves not only to allow the audience to get comfortably seated, but it gives a preview of what is to come and an acquaintance with leitmotifs which thereafter can be heard with critical appraisal. I am going to imitate this method and tell immediately what is on my mind.

1. The anesthesiologist should be a member of the professional staff, and his relations to the hospital ideally should be on the same footing as other members of the staff.

2. If his income is in any way regulated by the hospital management, it should be with the advice and consent of a staff committee of senior physicians for which I suggest the name "prudential committee."

I hold that such a prudential committee should pass on all fiscal relationships between physician and hospital when income is derived from other than the customary fees. I suggest the word prudential because it is new in the hospital staff vocabulary.

The meaning of prudential which appeals to me is that given in Webster's Dictionary: "watchful of one's own interest." I would reject the connotation of selfishness and emphasize the meaning, also found in Webster, "sane and temperate judgement, and wisdom that conduces to moral virtue." Such a committee to be useful should be (1) senior in age but still active, (2) small in number, not more than three, and (3) trusted alike by staff and management. The best the staff has to offer is none too good for this job.

We need both principles and mechanisms. Principles must be discussed at the highest levels in the councils of our national organizations. Mechanisms must be perfected and put into action locally. It is as foolish to expect Chicago to solve all medical problems as it is to expect all wisdom and direction on political matters to come from Washington, and while I shall discuss principles it is particularly the local mechanism to which I wish to address myself.

I believe that successful adjustment of relations between hospital and staff is so important that it calls for the utmost of wisdom on both sides, and while this function may have been carried on as a part of the duties of a staff executive committee or some such busy arm of the staff, I think that this area of negotiations merits a separate committee.

### HISTORICAL DATA

Up to 1890 few other than physicians administered anesthetics. In 1889 Miss Dinah Graham, a graduate nurse at St. Mary's Hospital, Rochester, Minn., began administering anesthetics under the supervision of Dr. H. W. Stinchfield. Soon thereafter Miss Edith M. Graham joined her. Both of these nurses had other duties, and they were paid by St. Mary's Hospital. In 1893 Miss Alice Magaw succeeded Miss Edith Graham, who had married Dr. Charles H. Mayo. Miss Magaw is thought to be the first nurse to devote her entire attention to anesthesia. She was trained by Dr. Stinchfield and was employed by the Mayos.

Dr. John S. Lundy provided the historical data.

Dr. Isabella Herb joined the staff in 1900, and the anesthesia department became a subsection of surgery, composed entirely of nurses. In 1906 Miss Magaw [1] reviewed over 14,000 instances of surgical anesthesia given during the previous twelve years. Dr. John Lundy became head of the section on anesthesiology in 1924. Dr. Ralph M. Tovell began the first fellowship, often called a residency, in 1929.

### MAYO CLINIC SETUP

The section on anesthesiology at the Mayo Clinic is now organized as follows: There are six staff physicians and thirty-one nurse anesthetists on salary, paid by the clinic and not by the hospitals. There are seventeen fellows in training who receive a stipend from the Mayo Foundation for Medical Education and Research of the University of Minnesota. Of these, seven are classed as first assistants and are paid an additional salary by the Mayo Clinic. From the beginning the patient has received one bill for medical and surgical care, including anesthesia. Sometimes extra charges are made by the hospital for unusual drugs, and arrangements for purchase and maintenance of apparatus vary slightly in the different hospitals connected with the clinic.

I have used the development of the service of anesthesiology at the Mayo Clinic, not to give a comprehensive review of what was going on in anesthesiology in the United States during this period, nor to imply in any way that the pattern of the Mayo Clinic can or should fit every situation. That is absurd. The community hospital in my opinion must provide suitable mechanisms for payment of fees for the superior services offered by trained anesthesiologists. I have used the Mayo Clinic experience to emphasize my thesis that the most important element in our present problem is not salaries or fees as such, but rather the control by physicians, by the staff, in this case by the clinic, and not by the hospital. Except in the beginning anesthesia at the Mayo Clinic has been administered and paid for under the control of physicians, not of hospital administrators or their trustees. This is the essential formula for the sound development of the specialty and of its capacity to serve patients.

### SOME CONSIDERATIONS

In training centers, such as university clinics and famous private clinics, young physicians who seek opportunities to develop in a specialty consider three important items: first, the possibility of obtaining a rich clinical experience; second, the opportunity for advancement, and, third, financial reward. It will be a sad day for us all when this order is reversed. It is inevitable that these considerations influence favorably the finances of some institutions, and the temptation is always at hand, as it is in all apprenticeships, that young physicians may be exploited. This is bad enough if one physician is enabled to profit unduly at the expense of another. It is intolerable if such profits accrue to nonprofessional persons, or even to nonprofit institutions, to pay for new facilities or to recoup losses in other departments of the institution. Physicians can rely on physicians to maintain quality of medical care even in the face of diminishing returns, but there is apprehension among physicians concerning the apparent eagerness of hospital management to derive profits from medical services in order that it may erase the red ink on their books in the strictly hospital service departments. Deficits should be borne by the community and not by special groups of physicians and their patients.

The problem before us comes into sharpest relief in the middle-sized community hospital, usually staffed by local physicians. Dr. McCuskey has shown that there are lacking 3,000 anesthesiologists to provide only one in each hospital. For the time being, therefore, many a small hospital, if its staff wishes to obtain the services of a trained anesthesiologist, must do so on part time, as they now do in the case of pathologists and roentgenologists. These skills must be extended from the larger institutions to make surgery safer for more difficult surgical risks. Here, certainly, is need for a prudential committee in each hospital.

In the smaller hospitals, busy staff physicians are at serious disadvantage in maintaining leadership in the affairs of the hospital in the face of full time administrators backed by state and national organizations. The argument of hospital management seems to run somewhat as follows, "You physicians have not organized this increasingly complicated medical care field. People are calling for such organization and we in the administrative world are not only able to organize your services but, as a matter of fact, we have already done so to an extent which you hardly realize." There has been no prudential committee to look after the interest of the staff physician.

This problem has received increasing attention by the specialist groups, by hospital associations, by Blue Cross and Blue Shield and by state medical societies. The prudent committee of the House of Delegates of the American Medical Association was empowered to study this problem and the action taken by the House was reported at the Annual Session in Chicago, June 1948. The Judicial Council has been studying anew the Code of Ethics of the Association in the light of present needs, and the problem under discussion is basically involved in that code.

### MASSACHUSETTS COMMITTEE REPORT

The best review that I have seen up to the time of writing was presented on Oct. 1, 1947, to the Council of the Massachusetts Medical Society by a committee, headed by Dr. Leland McKittrick, commissioned to study special services.[2] This committee was composed of representatives of the anesthesiologists, the pathologists, the roentgenologists, the Blue Cross, the Blue Shield, the hospital association and the Massachusetts Medical Society. It made a unanimous report, defining medical and nonmedical "services other than administrative, rendered by a registered physician directly or indirectly to or in behalf of an individual patient for the obtainment and interpretation of data, including consultation and advice, for the diagnosis, treatment and prevention of disease." I refer you to the full report for extension of this definition. This committee made the following recommendations for the establishment of proper relations between physicians and hospitals:

That the medical costs of hospital care be separated from the nonmedical costs, as can be done by existing and accepted methods of cost-accounting, and that they appear thus separated on the statement submitted to the patient.

That bills for all medical services be rendered in the name of the physician or physicians performing the services.

That a basic principle in the establishment of charges should be that each department be self-supporting. This principle should

1. Magaw, A.: A Review of Over Fourteen Thousand Surgical Anaesthesias, Surg., Gynec. & Obst. **3**: 795 (Dec.) 1906.

2. Report of Committee to Study Special Services, Council of the Massachusetts Medical Society, New England J. Med. **237**: 874 (Dec. 4) 1947.

be so applied that neither the hospital nor the physician rendering the service will exploit the patient or each other.

That fees for medical services collected by the hospital be established by joint action of a representative committee of the staff and the governing body of the hospital and including also the head of the department and the administrator.

That the basis of financial arrangement between hospital and physician may be salary, commission, fees, or such other method as will best meet the local situation, with due regard to the needs of the patient, the community, the hospital and the physician.

The *New England Journal of Medicine* commented on this report in part as follows:[3]

> So long as organized medicine uses its organization for the benefit of the patient and the improvement of its own standards and public relations, well and good. If, however, its collective power should be used, as could easily happen, to protect its members against reasonable, honest and decent competition even from without the profession, it is treading dangerously close to the less attractive paths of trade unionism.

OTHER EXPERIENCES AND COMMENTS

When the chairman of the Section on Anesthesiology was brought by the administration of the Hartford Hospital to look over his prospective job, all of us who occupied senior positions on the staff were asked to meet him, to look him over and, I suppose, in turn to be looked over by him. He came to us as a member of our senior staff, though his salary was paid by the hospital. In 1936, precedents had not been set by large community hospitals for him to follow. He had no prudential committee to assist him in his financial negotiations, nor has he had such a committee to give him counsel in the years that have followed. Large community hospitals which are thoroughly committed to training of residents in anesthesia have not yet established mechanisms which might be used as a guide for organization of such departments. No staff committee understands the detailed fiscal relationships of hospital management and all the salaried physicians who are members of the staff. The same may be said of the roentgenologists, who with anesthesiologists divide the bill for roentgenographic services collected for them by the hospital.

I shall not discuss how the present customs came about, nor the unpleasant consequences which until decently adjusted will continue to retard Blue Cross and Blue Shield expansion. There is hope that these differences may be settled, for the Massachusetts agreement gives a large measure of satisfaction. Blue Cross organizations have indicated that medical services now covered by their contracts will be transferred to Blue Shield when medical care contracts are widely sold, so that such transfer will not deprive large numbers of their clients of benefits to which they have become accustomed. The medical profession should always have clear control of all medical aspects of these plans which will be possible after this transfer. Anesthesiologists should all work to hasten that adjustment and make sure that it is enduring.

Some years ago Dr. Frank Lahey, in his address as president of the New England Surgical Society, warned that physicians must pay more attention to the management of hospitals or they will find themselves managed by hospitals. What I have told you of my own hospital experience can be repeated with variations by staff members of the community hospitals all over the country. It is not too late, however, to assert by deeds as well as words that a hospital without a staff is but a hotel. I agree heartily with Dr. Lowell Goin, who said, "It is the prerogative of the medical profession to decide on hospital policies when those policies concern the field of medical care," and ". . . the trustees of hospitals included in reputable nonprofit group hospitalization insurance plans should be told what they must and must not do when the subject under discussion is the dispensing of medical services."

COMMENT

Enunciation of principles, important as that is, is not enough. Anesthesiologists must develop the mechanisms to make those principles effective, and I suggest the prudential committee of the hospital staff as being a useful mechanism for this purpose. This committee should be trusted by management and staff alike. Its sole duty should be responsibility for the interests of the hospital, the staff and the employed physicians in the adjustment of their fiscal relationships and in wisely developing them to meet the needs of the community in the changing and complicated world in which we live. If every hospital could have such a prudential committee, endowed with foresight, temperate judgment and wisdom that conduces to moral virtue, we should move forward with confidence, knowing that we can adjust our present difficulties and meet successfully the calls of the future.

179 Allyn Street.

3. The Laborer and His Hire, editorial, New England J. Med. **238**: 640 (April 29) 1948.

## FUNCTIONS OF THE AMERICAN BOARD OF ANESTHESIOLOGY

### Past, Present, and Future

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Anesthesiology—the study and practice of the art and science of anesthesia in all its forms and all that pertains thereto—began in 1846 as the clinical administration of one agent by one method for one purpose, the relief of pain. As a technical procedure it was relegated to anyone available at the time and place of administration. This drew the condemnation of John Warren,[1] President of the American Medical Association, in his address at Cincinnati in 1850. He said then that the administration of the anesthetic should be in the hands of a properly qualified assistant.

Anesthesia was accepted promptly by physicians the world over, but, in the United States, recognition as a specialty came only after ninety years. Early physician anesthetists were listed as surgeons, special interest: anesthesia. The Long Island Society of Anesthetists, founded in 1905, was composed of graduate physicians, licensed in New York, and most of them were members of the American Medical Association. Many of them were not surgeons, and, the age of specialism in medicine having dawned, they became directory conscious and desired official recognition of the equality of their specialty in education, ethics and practice.

Recognition of special qualifications in most organized societies is by means of committees or examinations. During the 1931 Congress of Anesthetists, held in New York, a committee was established to seek a proper means to designate a specialist in anesthesia. After two years of failure of twelve well qualified

Read before the Section on Anesthesiology at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 23, 1948.

1. Warren, J. C.: On the Use of Anaesthetics, Tr. A. M. A. **3**: 385-387, 1850.

anesthetists to arrive at a solution, the New York Society of Anesthetists established in 1933 a Committee on Fellowship to attempt certification of anesthetists truly qualified as specialists. This group worked, by permission, copying the constitution and plans of the American Board of Urology. This work led to the formation on June 2, 1937, of the American Board of Anesthesiology, an affiliate of the American Board of Surgery. In 1941, it was recognized as a separate major specialty board. Experience gained by the Committee on Fellowship was of value in establishing regulations and examinations for the board.

The composition of a board is of utmost importance. Geography, finance, physical status, personality, educational background and type of practice must be weighed. All clinicians, all research workers or all professors would make a one-sided inadequate board. Time away from or in addition to regular work, to the extent of four to six weeks per year, is a consideration. Six year terms appear satisfactory. It takes an average of three years for new members to adjust to the routine, learn the regulations of the board and become useful members. To render sound judgments, fair decisions and accurate impartial investigations of irregular or unusual situations requires full attendance and open-minded and reasonable attitudes. These attributes have characterized the specialty boards in general and the Board of Anesthesiology in particular.

Several national organizations select three representatives (one of whom is elected a "member" of the Board), who present personal information of local problems from various parts of the country at the board meetings. Effort is made to avoid more than one representative from a city, but this is not always possible. The first board was composed of three representatives each from the Section on Surgery of the American Medical Association (there was no Section on Anesthesiology in 1937), the American Society of Regional Anesthetists and the New York Society of Anesthetists (which was originally called successively the Long Island, New York, then American Society of Anesthetists, now known as the American Society of Anesthesiologists, Inc.). The present board has ten members, four from the Section on Anesthesiology of the American Medical Association, four from the American Society of Anesthesiologists, one from the New England Society of Anesthesiology and one from the Section on Anesthesia of the Southern Medical Association. They came from Los Angeles; San Antonio; Rochester, Minn.; Hartford, Conn.; Cleveland; Providence, R. I.; Philadelphia; Tulsa, Okla.; Madison, Wis.; New York; Boston, and Reading, Pa.

The basic requirements of all specialty boards are similar or identical. Briefly they are: (1) graduation from a grade A medical school in the United States or Canada, (2) minimum of one year of internship in an approved hospital of the United States or Canada, (3) special training in the specialty, (4) membership in the American Medical Association, (5) time (five years) in the specialty and (6) examination in various forms.

The anesthesia board had no founders' group, all candidates having to meet identical standards. Standards were raised from a suggested period of supervised teaching, through a required one year, eighteen months and at present two years of required residency training. Preceptorship, though not advocated, may be substituted for approved residency time. This form of instruction varies with time and material facilities. Unlike approved residencies, which are relatively permanent, this form of training is limited to one student and one preceptor, mutually acceptable, and in each instance approved in writing by the board on recommendation of the Committee on Residency.

During the war, credit for service in anesthesia was given to a maximum of one year as residency training. This was an error, as too many could not satisfy the examination requirements without the supervised training. It is evident that quantitative clinical experience does not substitute for the didactic instruction, the conferences, seminars, literature sessions and laboratory research that comprise the special training now required and essential to a specialist certified in anesthesiology. Because of the war, other restrictions, as "grade A" and "United States or Canada," were occasionally set aside. This was only after due consideration and investigation, but it proved to be one of the pitfalls of expediency in emergency.

Here is a good place to correct some misstatements. Abe Martin intimated that often "it ain't what you don't know, but what you know that ain't so, that makes so much trouble." No specialty board is a union, and it does not issue degrees or licenses for any special practice. It merely sets standards for those who voluntarily seek its designation as "specialist." The boards do not approve or withdraw approval of residencies; this is the function of the Council on Medical Education and Hospitals of the American Medical Association, which makes the inspections and final decisions. It does confer with the specific board concerning specialty items, and the College of Surgeons is also invited to submit recommendations. The American Board of Anesthesiology has never required that heads of approved residencies must be specialists certified by the board. Some certified specialists have no special ability or desire to teach. This board knows that there are hundreds of physicians who are factually qualified to practice anesthesiology who would not or could not seek certification by this board.

If there were no human factors and no deviation possible from the printed regulations, then a machine could be set up to receive the credentials and fee, exhibit the examinations, evaluate the answers and issue a signed sealed certificate of qualification. Fortunately, rules made in good faith may for adequate reason be variously interpreted by the use of common sense, vision and integrity on the part of the members comprising the board.

This board is aware that its 100 per cent requirement of limitation is not always followed. It is not a sensible regulation from the point of view of education. It was adopted through expediency. Certificates have been withdrawn for failure to observe it. No candidate is put through an F.B.I. process, but the board does have an extensive and very efficient system of checkup on credentials. To date no person has been permitted to take the examinations if any member of the board knows that he does not comply with the 100 per cent limitation clause. No amount of rumor will institute revocation proceedings, but one single written complaint necessitates immediate and thorough investigation.

Examinations are abominations to all concerned. They have been used in some form in all known human endeavor to ascertain true fitness for special designations indicating proved qualities, and this board has found no substitute. It has, therefore, set up a system of three types of examination—written, oral and practical. One application covers all, and advancement is automatic on successful completion of a preceding part.

For the fee (currently $100), the candidate has two calendar years to pass each part; that is, he may have three chances at each examination, as today and one year and two years later. If the candidate should fail three times, he is required to file a new application and fee and begin again under the rules then in effect.

The written examinations were of the essay type until 1948, when a change was made to the multiple choice, International Business Machines type of examination. They are designed to cover basic science as applicable to anesthesia. The subjects or categories are anatomy, physiology, pharmacology, pathology, and chemistry and physics. The new type examination speeds the reports by nearly five months. Former reports were made by the three examiners to the secretary's office on candidates known to them only by number; the average was ascertained in the secretary's office, and no examiner knew the grades given by the other examiners. Where there was a variation of 20 points, books were sent to additional examiners. This system prevented favoritism, schools or indigestion from prejudicing a final mark. Candidates were notified only of "pass," "fail" or "condition," with no grade given. However, it was strictly observed that 75 per cent was required to pass. All questions of the essay type used in examinations were published at some time in *Anesthesiology*. The new type questions will not be published. Written examination may be taken after completion of two years of supervised training. Written examination is held the third Friday of each January, at ten different centers.

Oral examination is given only after completion of all the remaining requirements, as American Medical Association membership (through the County Society) and five calendar years of practice (including the special training period). The candidate meets all board members at the briefing session preceding the examination. He then appears before four regular and four associate examiners, two in each of four rooms. Discussion of each examination is held by the whole board and the associate examiners. Consideration is given to factual answers, attitude in answering and general impression made on all examiners. This method teaches the associates the plan of oral examination and prepares them as prospects for future board membership. Some have questioned the fairness of the examinations, but those willing to serve in them have been high in their praise after participation in the proceedings. A recent and valuable innovation is the "gripe session," conducted by a board member who has not participated in the examination. He receives voluntary verbal complaints or suggestions on any phase of the examinations, which makes the examinations following such sessions more valuable.

Those who fail are urged to confer with members of the Examinations Committee, who will go over their papers or oral reports. Nearly all have left these conferences convinced that they were fairly and properly treated. Errors can occur, and the board is prompt to make corrections if errors are proved. All candidates are assured that the board does not wish to set excessive standards, but, in the applicants' own interest, high standards must be maintained. Oral examinations are given during the third week of each October.

Practical examinations are given in all instances when no member of the board has observed the candidate work or the board does not know the local situation in relation to the problems of the anesthetist. It consists of a survey of clinical and theoretical work, of the equipment and local attitude of colleagues and associates in the candidate's own location or operating room. Report is made to the board, evaluated and, if satisfactory, is followed by certification.

Variations in the material covered and in the accepted answers caused an appeal for a fixed curriculum. Local working conditions do not permit a formal rigid pattern to be established in all centers. There is available through the American Society of Anesthesiologists and the American College of Anesthesiology a booklet, "Anesthesiology," giving in concise form the major requirements and reference texts. It will be sent on request to members of those groups or for a small charge (25 cents) to nonmembers. The outlines or patterns for three types of approved residencies are included in the booklet. They are adapted for a large hospital, a small hospital and a medical school-hospital combination department.

Residency approval forms should be requested from the Secretary of the Council on Medical Education and Hospitals of the American Medical Association, Chicago. Residency approval may be temporary or full. Full approval is in effect until the next inspection, at which time it may be renewed or withdrawn. Temporary approval is for an indefinite period, until the first inspection has been made. Termination of residency approval is on notice from the Council. Adequate opportunity is given for the hospital and for the residents to correct any unsatisfactory situation. When there are no satisfactory candidates from an approved residency, review by inspection should be expected. Cooperation with the Council has been prompt, full and satisfactory. Lists of 152 approved hospitals and 487 residency approvals are to be found in the May 1, 1948, issue of THE JOURNAL.[2] Some 35 additional hospitals have been recommended for approval since May 1.

Extra written and oral examinations may be given at intervals of six months with the regular examinations. Practical examinations are given at any time convenient for examiners and examinees. The certification of 424 physicians, establishment of 177 approved residencies, a Section on Anesthesiology in the American Medical Association, recognition in the House of Delegates, the statements of the College of Surgeons, the American Hospital Association and other national medical organizations that the practice of anesthesiology is the practice of medicine, all this with the growing acknowledgment of the increasing efficiency in this field of medicine by all physicians, and through them by more efficient, pleasant and safer service to the patients, is a certain strong indication of a favorable future for the work as instituted, carried on and projected for the years to come by the American Board of Anesthesiology.

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## ABSTRACT OF DISCUSSION

DR. PHILIP D. WOODBRIDGE, Reading, Pa.: The tendency of hospitals to require that every chief must be a certified specialist has put the boards almost in the position of being hiring halls for hospital staffs. This is an improper and unwelcome function for them. The boards would do well to educate hospital management to alter this stand. In the practical examinations only two candidates have failed thus far. These examinations should test the candidate's mastery of the art of anesthesia. Instead, they have become mainly an inspection of his working conditions. The nature or the name of the

2. Arestad, F. H.; Reid, E. K., and Leveroos, E. H.: Approved Internships and Residencies in the United States, report of the Council on Medical Education and Hospitals, J. A. M. A. **137:** 23-89 (May 1) 1948.

examinations should be changed, or they should be dropped. In several cases equivalent rather than identical standards have been used, in that written examinations were omitted and oral examinations became a formality. It is felt that long successful experience is evidence of intangible knowledge and skill, fully as important as the factual knowledge that can be tested in an examination. The recently adopted multiple choice type of written examination appears to test the candidate's detailed factual knowledge rather than his intelligence. Both should be tested if the value of certification is to be maintained. Membership in the American Medical Association is a requirement for certification. This smacks of trade unionism. A candidate should not be forced to join any organization in order to be declared a competent specialist. Concerning the 100 per cent limitations: The certified specialist may make a physical examination of a patient, provided that the patient is scheduled for operation, but if instead the same examination were to be paid for by an insurance company, he would be subject to revocation of certification. This seems somewhat parallel to the arrogant jurisdictional rulings of labor unions. It would be advantageous for the anesthesiologist to put in some time on cardiology, bronchioesophagology or neurology, but he is prevented from doing so by this restrictive requirement. Dr. Kirklin in 1941 wrote: "The requiring of one hundred per cent is excessive and unfair. . . . If the major portion of [a candidate's] practice is in his special field, he should be deemed eligible." One result of this requirement has been that a second certifying board, the American College of Anesthesiologists, has been set up, with a 50 per cent requirement. It is unfortunate that there should be two certifying boards in one specialty. It would seem better for the two to merge their functions into one board.

## REHABILITATION AND GENERAL PRACTICE

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The practice of rehabilitation for the general practitioner, or for any physician, begins with the belief in the basic philosophy that the doctor's responsibility does not end when the acute illness is ended or operation is completed; it ends only when the patient is retrained to live and work with what is left. This basic concept of the doctor's responsibility can be achieved only if rehabilitation is considered an integral part of medical service. Any program of rehabilitation is only as sound as the basic medical service of which it is a part. The diagnosis and prognosis must be accurate, for it is on them that the feasibility of retraining is determined.

In addition to the general diagnostic studies, the medical evaluation of orthopedically handicapped persons must include muscle tests, tests of joint range of motion and tests for the inherent needs in daily living. In the Rehabilitation Service at Bellevue Hospital, a check list of ninety-six items is used to determine these factors.[1] They include: first, bed activities, such as moving from place to place in bed, and the ability to sit erect; second, toilet activities; third, eating and drinking; fourth, the ability to dress and undress, such as tying shoe laces, manipulating buttons, zippers and other fasteners, and applying and removing braces; fifth, hand activities, for example, winding a watch, striking a match and using various door knobs and latches; sixth, wheel chair activities, getting from the bed to the wheel chair, the wheel chair to bed and in and out of the bathtub, and, finally, elevation activities, which include the needed abilities for walking, climbing and traveling.

At first glance, such a test list sounds formidable and time consuming, but in reality the information may be easily obtained by a therapist, nurse, a well trained volunteer or a member of the patient's family. From the special check sheets used for charting the activity accomplishments, information is readily available both on the status of the patient at the time of admittance and his progress while undergoing rehabilitation.

The use of such a check list is particularly helpful if personnel are not available to do definitive muscle testing and accurate range of motion determination, for the daily activities test can be completed in the hospital, the physician's office or the patient's home. The subsequent training program is designed to teach the patient the various skills and activities which he cannot perform.

In Bellevue Hospital, after the basic medical work-up and the range of motion, muscle and needs of daily living tests, the physician, in conference with the therapists and other staff members, prescribes for the patient a full day's program, running from 9 a. m. to 4 p. m. These prescribed activities include training in the ambulation and elevation rooms and the remedial gymnasium, occupational therapy, physical therapy, speech therapy or any other activity which may be helpful in meeting the specific needs of the patient.

In a comprehensive rehabilitation program, vocational guidance specialists should also be available for guidance and testing, in order that the patient may be started on a prevocational exploratory and work-testing program as soon as it is medically feasible. However, good basic rehabilitation can be carried out with the personnel available in the ordinary general hospital, if such a program is properly organized, supervised and prescribed by the physician.

The rehabilitation of hemiplegic persons is a typical example. There are a number of simple progressive procedures in the rehabilitation of hemiplegic patients, one of the commonest disabilities seen in general practice. In the early stages of treatment, the following procedures should be instituted to prevent deformities:

1. Footboard or posterior leg splint to prevent foot drop
2. Sand bags to prevent outward rotation of the affected leg
3. A pillow in the axilla to prevent adduction of the shoulder
4. Quadriceps setting to maintain muscle strength

All of these procedures are relatively simple and require no special equipment. Their use, however, will prevent crippling anatomic deformities and hasten the rehabilitation of the patient.

The next procedure indicated is the institution of pulley therapy.[2] This can be done very simply with a small pulley attached to a gooseneck pipe over the head of the bed, using the ordinary clothes line rope with a 1 inch (2.5 cm.) webbing for the hand loop. With the stretching and passive exercise provided by pulley therapy, the range of motion can be increased and adhesions prevented.

Pulley therapy has the advantage over the usual stretching exercises that are done passively, for the patient knowing his own pain threshold will proceed to fully tolerated motion much more quickly. Pulley therapy can also be used to aid in the reestablishment of reciprocal motion patterns.

The patient, at this stage, should be encouraged to sit erect in order to reestablish balance. Speech therapy.

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Read in the Session on Physical Medicine of the Section on Miscellaneous Topics at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 24, 1948.

1. A Test for the Activities Inherent in Daily Living, New York, Bellevue Hospital.

2. Deaver, G. G., and Peterson, K.: Pulley Exercises to Increase Joint Movement, Arch. Phys. Med. **27**: 17 (Jan.) 1946.

if indicated, should be instituted at this time. In the absence of a trained speech therapist, the speech reeducation can be started under medical supervision by any teacher who has had some experience in this field. In aphasic conditions, it is well for the physician to point out to the patient and family the nature of the condition in order that the inability to use the tools of language may not be interpreted as loss or diminishing of the ability to think and reason.

The next progressive stage in retraining hemiplegic persons is ambulation, which should be started by:

1. The practice of balance in the standing position progressing to parallel bars
2. The teaching of a heel and toe gait to minimize clonus and to reestablish normal walking habits and reciprocal motion
3. Use of a short leg brace, which will be needed in approximately half of all cases to correct foot drop

All of the equipment for training in ambulation is simple and readily obtained by the general practitioner. If parallel bars are not available, two kitchen chairs may be substituted.

In the advanced stages of retraining, ambulation is continued with:

1. Instruction in crutch walking, starting usually with the alternate four point gait
2. Teaching elevation, stressing climbing steps, curbs, stairs and ramps

Concurrently with training in ambulation, attention should be given to retraining in the activities of self care and daily living.

Obviously the physician himself cannot undertake the actual administration of the retraining, but the therapist, nurse, volunteer or even a member of the family can conduct the activities under his supervision. With such a program, many of the complications usually following apoplexy can be avoided and a great deal of time and ability salvaged.

A similar program of activity may also be started early with many arthritic patients. Passive and mild active motion, even when evidence of the acute disease has not completely subsided, can be instituted with caution, gradually increasing to a full program of activity as indicated by the subjective and objective symptoms. The rapidity with which the program may be advanced should be determined by fatigue, pain, swelling, febrile reaction and analgesic requirements. The sedimentation rate may also be helpful. However, in a number of cases of rheumatoid arthritis, it has been observed that patients, bedridden for a long time and from whom all activity has been withheld because of an elevated sedimentation rate, improved functionally and clinically, without exacerbation, with a carefully graded program of training and activity. In a number of instances, the sedimentation rate began slowly to fall after activity was started.

Presenting some of the most difficult training problems in rehabilitation are the quadraplegic and paraplegic patients. Although the rehabilitation of these patients is a mission requiring the teamwork of the orthopedist, the neurosurgeon, the urologist, the neurologist and in many instances the plastic surgeon, it is a rehabilitation problem in which the general practitioner plays an important role. His services are invaluable in maintaining the morale, nutrition and general health of the patient, and on his shoulders frequently falls the task of correlating the work of the specialists and interpreting it to the patient. In many instances, he must also make the decision as to whether rehabilitation should be attempted. This decision is one that should be approached with hope, courage and understanding, rather than the defeatist attitude that so frequently exists. Such an approach has been achieved in the Veterans Administration publication, "What's My Score."[3] The following paragraphs quoted from this publication are honest and factual but also give insight and hope to the patient:

> When the spinal cord is completely severed, it will not grow together again, and, up to now, no technique has been developed by medical science that will accomplish this and make it heal and function again. Some spinal-cord injuries are not complete and, in time, there may be some return to function.
>
> There are many diseases for which there are no cures, but medical science is finding out new things all the time. Twenty years ago, nothing could be done for diabetes and other similar diseases; now they are easily managed. A great deal of research is being done on nerve and spinal cord injuries, and some day we may get the answer. But at the present time, when the spinal cord is severed, there is no answer except YOU—you and your desire to live an independent life.
>
> Many men have done just this. This book contains their experience and the techniques they have developed. You can do the same thing if you get in there and pitch. . . .

Of the approximately 2,600 paraplegic veterans to whom that message was addressed, more than half have been taught to walk with the aid of crutches and braces and have left Veterans Administration hospitals ready for jobs or further vocational training. The case loads in the Veterans Administration's six paraplegia centers, however, have not decreased by a single case, as the rehabilitated patients have been replaced by patients with conditions resulting from peace time accidents.

As with the paraplegic patients, the general practitioner is forced to call on the services of medical specialists when dealing with patients undergoing amputation. However, he must assume the responsibility for preparing his patient physically and psychologically for the amputation and see that the patient has the proper prosthetic device adequately fitted and is trained in its use.

One phase of the management of the amputee to which the general practitioner should give particular attention is the immediate postoperative period, while the stump is being shrunk in preparation for a prosthetic device. During this period of six to eight weeks, the patient should be given graduated conditioning exercises in preparation for both crutch walking and the later use of the artificial limb, and measures should be taken to prevent anatomic deformities.

For example, it is not an uncommon practice in many hospitals following an above knee amputation to elevate the stump on a pillow. However, if such elevation is maintained for as long as two weeks, a flexion deformity will occur which will take from six to eight weeks of arduous painful work before sufficient hyperextension can be regained for satisfactory walking.

In advising his patient on the selection of a prosthetic device, the general practitioner must be aware of the fact that not all limbs are suitable for all amputees. In fact, he must realize that not all amputees can wear artificial limbs profitably. It has been noted on the rehabilitation service at the New York University College of Medicine that an above knee amputee in the older age group cannot, as a rule, profitably be trained to use a prosthesis if he is unable to perform a swing through gait on crutches.

3. What's My Score, Publication 10-10, Veterans Administration, Washington, Government Printing Office, 1946.

The physician must point out objectively to the patient those skills which the patient can expect to achieve with proper training and those skills which the patient has little chance of ever regaining. Extreme caution must be taken in the latter, however, as it is unwise to tell a patient what "he cannot do," for this cannot be determined in most cases until the patient has had adequate training. Training is absolutely essential if the amputee is to be successfully rehabilitated.

One of the most pressing medical problems today is that of chronic disease, and in this field the general practitioner bears the brunt of the load. In 1940, the 26.5 per cent of the nation's population over 45 required over half of the nation's medical service. By 1980, it is expected that the number of persons over 45 will constitute nearly half of the population. We are living in the era of an aging population. A thousand years ago the average length of life was 25 years; at the turn of the century it was 49; today it is 66. In 1900, 1 person in 25 was 65 years of age or older; it is estimated that in 1980, the ratio will be 1 in 10. The chances are now 2 out of 3 that a young man starting his working life at the age of 18 will live to the retirement age of 65. A 45 year old man today has 70 chances in 100 of reaching the age of 65, and the chances of a 55 year old man are 87 in 100. The needs of this great group can be met only with a dynamic therapeutic program.

Age plus physical disability will prevent many persons from returning to competitive employment. Vocational placement, however, is not the only valid goal of rehabilitation. The factors of self care and the ability to do productive work while still living in a hospital, home or other adult institution are also valid objectives. They are valid medically and socially, for their effects on the well-being of the person and economically, in that the personnel and operating costs of the institution or the patient's home are thereby reduced. Using the known technics of selective placement, these persons should be allowed to work within the limits of their capacities. Work, properly prescribed, is one of the most valuable therapeutic tools in the treatment of geriatric patients and those suffering from chronic disease. The problems of chronic disease and the aging population can be met only by the creation and utilization of abilities, rather than the building of facilities.

In rehabilitation, as in definitive medical care, the general practitioner is an essential and integral member of the therapeutic team. Today, as new and mounting demands are made on him to restore his patients to maximum economic and social effectiveness, he must turn to the expanding field of rehabilitation and physical medicine for increased technical skills and assistance. However, he can apply many of these simple technics directly in his office, home and hospital practice to help his physically disabled patients "learn to live and work with what they have left."

### ABSTRACT OF DISCUSSION

Dr. Sedgwick Mead, St. Louis: Have you used Dr. Delorme's resistance exercises in the retraining of persons with hemiplegia or central lesions?

Dr. Rusk: I have found them helpful.

Dr. Mead: I have had persons with poor gait and atrophy superimposed on lack of control; after treatment these persons are able to take one step after another instead of dragging one foot behind the other.

Dr. Rusk: I have found building up muscle tone very helpful.

Dr. Weiss: Do you have any information about the rehabilitation of paraplegic patients in civilian life of the older age group. Veterans were a selected group of young men with far better potentialities. Have you any information as to the rehabilitation of the older paraplegic patient?

Dr. Rusk: I have had patients in their sixties, and I find a different motivation in the civilian than in the veteran, because the civilian is not protected by an adequate pension which will allow him to live at least without fear of want. I found in all age levels that in the civilian there is splendid motivation. I had 1 case recently at the new Institute of Rehabilitation of Physical Medicine in New York University. The patient was a 21 year old girl with a lesion of the sixth cervical segment, with no use of her triceps and inability to hold anything in her hands. She well exemplifies the fact that the vocational objective is not the total objective of rehabilitation. She could never be taught to walk, because she had no triceps function. However, I was able to make special gloves by turning the usual glove backward, cutting off the fingers and sewing the thumb across the palm. She could then place a knife, fork, spoon and toothbrush into the thumb of the glove and learned to feed herself and take care of her toilet needs. Another pair of gloves was devised with a peg arrangement in the thumb with which she was able to operate an electric typewriter. With the fitting of a proper wheel chair, she was able to get about the room unaided. These three simple things allowed her to go back to her home and accept a position as office manager in her brother's business, rather than spend the rest of her life as a home-bound invalid. I have found tremendous motivation in all age groups of hemiplegic and paraplegic patients, and the results of training have been gratifying.

## EFFICACY OF THE SUPPOSITORY AND OF JELLY ALONE AS CONTRACEPTIVE AGENTS

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One of the greatest obstacles to the prescription of contraceptives by physicians has been the belief that the diaphragm with a spermicidal jelly or cream is the only reliable method which the patient herself can employ. With this in mind, the physician recalls also the time-consuming features of fitting a diaphragm and instructing the patient in its use and as often as not side-steps the whole issue by omitting any form of contraception from his armamentarium. This contraceptive method was developed to meet some of the disadvantages of the sheath, especially the frequent unwillingness of the man to use it. It had the further advantage of putting the control of contraception in the hands of the woman, which was logical, as she was more available for education and more aware of the necessity; since she is the greater sufferer from an unwanted pregnancy, it was supposed that she would be more willing to learn the method and to use it regularly.

Under the direction of specialists the diaphragm served a useful purpose and suited the needs of a certain group of patients. However, its inherent disadvantages have kept it to a large extent restricted to the practice of the few, for, in general, the physician's interest in teaching a patient a prophylactic measure is much more apt to be sustained when a simple explanation is sufficient than when extensive instruction in technic is

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required. Many physicians find that the fitting of diaphragms, teaching the patient how to insert and remove them and requiring the patients to return for another check on their ability to insert and remove them carry disagreeable implications and are altogether too time consuming to be practicable.

The confidence of a physician in the method is badly undermined, furthermore, when he finds the literature recording disagreement among specialists as to whether the diaphragm should be inserted dome up or dome down; whether or when a douche should be taken, and with what solution, and whether the size prescribed should be ascertained by means of fitting rings or by the diaphragm itself, to enumerate only a few problems. All proponents of the method agree that there are certain women unsuited to the technic: notably those seeking premarital advice, those with extensive relaxation of the vaginal floor and those unable to learn how to insert and remove the diaphragm. The method is totally unsuited to the obstetrician with a large practice, who lacks the time to give the necessary instruction. Obviously, it is wholly unsuited to the large clinic, whether in the city, or in the rural areas, where the number in the postpartum clinic precludes the allocation of twenty minutes or more to each patient for this particular service. It is certainly not adapted to the needs of a patient in any walk of life who seems mentally incapable of understanding the method.

Indeed, it seems to some observers that the fundamental concept of the diaphragm as an occlusive agent is fallacious, as one can hardly expect a fit between the rim of the instrument and the vaginal wall close enough to prevent the passage of sperm to the posterior part of the vagina, and its only occlusion is of the cervix itself, preventing direct insemination. Examination of many patients with extreme anteversion of the uterus has demonstrated that often the cervix is caught by the rim of the diaphragm and is pushed back into the posterior part of the vagina, completely uncovered. In such cases the contraceptive value derived from the method arises solely from the jelly or cream associated with its use. When we investigate the actual use of the method by careful questioning of the patients, we discover that the majority of them regard the diaphragm as the important feature of the method and the jelly or cream simply as a lubricant; when they have no jelly or cream on hand, they use any material convenient at hand for its lubricating qualities. These factors, among others, explain why pregnancies occur in spite of regular but improper use of the method.

An advantage claimed for the diaphragm-jelly technic was that it permitted the physician to control the supplying of patients with the material and, therefore, left it to his discretion as to whether or not it would be prescribed; moreover, it gave the patient the added advantage of a pelvic examination which she might otherwise not have, at which time any existing pathologic process could be brought to her attention. These purposes were quickly defeated, however, as diaphragms and jelly were made available to purchasers through drugstores without the intermediary of the physician in the transaction, either to fit or prescribe the material. This arose partly from the desire of the patient to avoid payment of the physician's fee and partly from the unwillingness of physicians to fit the diaphragms. The jelly sold in these combinations seldom has good spermicidal qualities, and pregnancies occurring in spite of this use have further contributed to the distrust of patients and physicians of the value of the method.

In response to popular demands for a simple contraceptive, reasonably free of objections, various materials have been marketed under the names of jellies, creams and suppositories, and these have advantages of simplicity of use, from the point of view of the method's being readily understood by the patient and requiring the minimum of privacy for their insertion. Manufacturers learned quickly what physicians are often slow to grasp, that any therapeutic measure, requiring the unremitting cooperation of the patient as an important factor in success, must be simple to use and free of objectionable qualities. Thus the patient has forced the physician to consider seriously the merits of these simpler methods for his own as well as the patient's best interest. Similarly, in the practice of a large clinic, if the method which is simple can be demonstrated to be reliable and free of objection, much of the difficulty in supplying patients with a contraceptive is eliminated.

The requirements for a contraceptive are, in certain phases, more stringent than those connected with any other material prescribed. When it is recalled that the patient subject to cardiovascular renal complications of pregnancy has apparently a high rate of fertility and that for the true cardiac and the tuberculous woman a single pregnancy may prove fatal, one becomes aware of the urgent necessity that a contraceptive should be as effective as it is humanly possible to make it. A single live sperm circumventing the barrier to its entrance into the cervix is all that is required to bring about a train of circumstances upsetting to all concerned. Thus the contraceptive, under the various conditions in the vaginal tract, must have a higher efficiency rate than is required of any antiseptic. Secondly, it must be so free of objectionable qualities that the patient does not mind using it, and, to make it completely successful, it should have some qualities from which the patient derives, or imagines she derives, benefit. Many women retain their faith in douches not only because they are simple to take but because the odor of the solution, or its qualities of giving a pleasing after effect in addition to the cleansing, appeals to their aesthetic sense. This, again, has been made use of by manufacturers, who have endeavored to incorporate some of the qualities mentioned into their products, with a resulting popular appeal. It remains, therefore, to examine these products in order to determine what preventive qualities they may possess.

One of the difficulties in evaluating measures requiring patient cooperation lies in ferreting out the truth in regard to irregularity of use. Even in so simple a matter as a patient's taking iron for anemia of pregnancy, obstetricians find a great similarity between private patients and those in the clinics and experience difficulty in keeping more than 80 per cent of women regularly on the medication. One should, therefore, be willing to accept in the population at large about 20 per cent failure of patients to cooperate in the use of a contraceptive.

## BALTIMORE STUDY

With these circumstances in mind we decided independently, several years ago, to study the efficacy of certain simpler methods of contraception which did not entail the use of the diaphragm. Since in Baltimore an investigation had just been completed on the safety and value of phenylmercuric acetate as a contraceptive,[1] suppositories containing 0.05 per cent of this chemical were employed solely in that investigation. All patients

1. Eastman, N. J., and Scott, A. B.: Phenylmercuric Acetate as a Contraceptive, Human Fertil. 9: 33-42 (June) 1944.

were of known fertility, since they had recently been delivered of infants; none were lactating, and all were menstruating regularly and living with their husbands. All women in the study returned for check-up and additional supplies every two to three months. The following instructions were given:

1. Keep suppositories in a cool place.
2. Remove the tinfoil covering before using.
3. Insert the suppository as far as possible into the vagina (birth canal), before each and every sexual relation.
4. The suppository melts in the vagina in —— minutes,[2] and you must wait at least this long before having sexual relations.
5. Do not wait more than thirty minutes after inserting the suppository.
   If you do wait more than thirty minutes, you must insert another suppository before sexual relations.
6. Lie flat in bed for at least two hours after sexual relations. Do not douche.
7. Wait at least six hours after relationship before douching and then douche with warm soapy water.

In order to make certain that the suppositories would be acceptable to husband and wife and in order to eliminate as much as possible half-hearted and irregular users, a trial period of six months was allowed before the patient was actually included in the investigation. In other words, in addition to the 333 women listed in table 1, more than 150 patients were given suppositories but had to be omitted from the study because (*a*) they did not return after the first or second visit and could not be traced, (*b*) they did not like suppositories and changed to some other method, (*c*) they exhausted their supply of suppositories or (*d*) they found themselves pregnant during the first month or two after using the suppositories. There were 14 known pregnancies in this group and possibly others of which we do not know.

TABLE 1.—*Contraceptive Efficacy of Suppositories in 333 Patients (Nov. 1, 1943-March 1, 1948) in Baltimore Study* *

| Number of Patients | Months Suppositories Used | Patient Months | Method Failures | Patient Failures |
|---|---|---|---|---|
| 41 | 6 | 246 | 6 | 3 |
| 37 | 7 | 259 | 3 | 5 |
| 21 | 8 | 168 | 2 | 4 |
| 32 | 9 | 288 | 5 | 1 |
| 17 | 10 | 170 | 2 | 2 |
| 18 | 11 | 198 | 3 | 0 |
| 15 | 12 | 180 | 4 | 1 |
| 19 | 13 | 247 | 3 | 0 |
| 17 | 14 | 238 | 1 | 1 |
| 24 | 15 | 360 | 3 | 0 |
| 16 | 16 | 256 | 1 | 0 |
| 15 | 17 | 255 | 2 | 0 |
| 10 | 18 | 180 | 0 | 0 |
| 5 | 19 | 95 | 1 | 0 |
| 4 | 20 | 80 | 0 | 1 |
| 11 | 21 | 231 | 2 | 0 |
| 3 | 22 | 66 | 0 | 0 |
| 8 | 23 | 184 | 0 | 0 |
| 9 | 24 | 216 | 1 | 0 |
| 3 | 25 | 75 | 0 | 0 |
| 1 | 26 | 26 | 0 | 0 |
| 4 | 27 | 108 | 0 | 0 |
| 3 | 28 | 84 | 0 | 0 |
| 333 | | 4,210 | 39 | 18 |

* When calculated according to 100 woman-years of exposure to conception, by means of the usual formula

$$R = 1200 \times \frac{\text{Conceptions}}{\text{Months of Exposure}},$$

the pregnancy rates were as follows:

$$R \text{ (method failure)} = 1200 \times \frac{39}{4,210} = 11.1$$

$$R \text{ (total failures)} = 1200 \times \frac{57}{4,210} = 16.2$$

2. Melting time is determined in each patient and written here. It varies between 4 and 10 minutes in different patients.

Because of the time relationships several of these 14 pregnancies may have existed at the time suppositories were first used. These failures may be added to those shown in table 1 and the results recalculated if desired, but it is quite impossible to state with even approximate accuracy just how many weeks or months, or how regularly, this group used the medication.

TABLE 2.—*Efficacy of Diaphragm and Jelly as Reported in the Literature*

| Series and Method Prescribed * | Months of Exposure | Number of Conceptions | Chance of Conception † |
|---|---|---|---|
| 1. New York ‡ | 18,012 | 185 | 12 |
| 2. Philadelphia § | 13,305 | 163 | 15 |
| 3. Nashville ‖ | 5,542 | 81 | 18 |
| 4. Cincinnati ¶ | 51,308 | 787 | 18 |
| 5. San Juan, Puerto Rico # | 2,293 | 64 | 33 |

* From Beebe, G. W.: Contraception and Fertility in the Southern Appalachians, Williams & Wilkins Company, Baltimore, 1942.

† Conceptions per 100 woman-years of exposure to the risk of conception, i. e.,

$$R = 1200 \times \frac{\text{Conceptions}}{\text{Months of Exposure}}$$

‡ Stix, R. K., and Notestein, F. W.: Controlled Fertility: An Evaluation of Clinic Service, Baltimore, Williams & Wilkins Company, 1940.

§ Beebe, G. W.: Contraception in a Private Medical Practice, unpublished Master's Essay, Columbia University Library, New York, 1938. Dewees, L., and Beebe, G. W.: Contraception in Private Practice: A Twelve-Year Experience, J. A. M. A. **110**: 1169-1172 (April 9) 1938.

‖ Beebe, G. W., and Overton, J.: The Contraceptive Service of the Department of Health, City of Nashville, J. A. M. A. **118**: 1045-1049 (March 28) 1942.

¶ Stix, R. K.: Birth Control in a Midwestern City: II. The Effectiveness of Contraception After Clinic Attendance, Milbank Mem. Fund Quart. **17**: 152-171 (April) 1939.

# Beebe, G. W., and Belaval, J. S.: Fertility and Contraception in Puerto Rico, Puerto Rico J. Pub. Health & Trop. Med., to be published.

The patients who returned and stated that they did not like the suppositories gave the following reasons: (1) Neither husband nor wife had confidence in suppositories, since they had always heard that the diaphragm was the safest method; this was the commonest explanation (35 cases); (2) irritation on the part of the husband (5 cases); (3) irritation on the part of the wife (3 cases), and (4) too "messy" (7 cases). In looking back over the histories of the 333 women who used suppositories six months or more, it was found that 6, or 2 per cent, had complained of some irritation on the part of either the husband or the wife when the suppositories were first employed, but they observed that this had not recurred after the first or second use.

The results of the Baltimore study are shown in table 1. "Patient failures" are those in which the woman acknowledged that she had failed to use the suppository on one or more occasions. "Method failures" are those in which inquiry failed to obtain any acknowledgment of coitus without preceding insertion of a suppository. Because of personnel shortage during and after the war, it was not possible to visit these patients in their homes as much as would have been desirable, and this apparent lack of interest and encouragement on our part may be the cause for the higher rate of failure in Baltimore than in Columbia. This important aspect of the problem will be touched on again in connection with the Columbia study. However, although the gross figure of 16.2 pregnancies per hundred woman-years of exposure [3] may appear high when compared with the South

3. The term "pregnancies per 100 woman-years of exposure" has become the standard method of expressing conception rates with or without birth control procedure. In calculating the period over which a given woman has been exposed to conception, intervals during which she is pregnant are omitted, because another conception is obviously impossible at that time and hence she cannot be considered as exposed to it. For example: If a woman has had six full term pregnancies in ten years of married life, the period over which she was exposed to pregnancy would be one hundred and twenty months (period she was married) minus sixty months (period she was pregnant) or sixty months, or five years. If 20 women with an identical experience were observed, there would be 100 woman-years of exposure during which time one hundred and twenty conceptions occurred, that is, the pregnancy rate would be one hundred and twenty for the hypothetic group.

Carolina record, it compares favorably with the reported results with the diaphragm and jelly, as tabulated by Beebe [4] and reproduced in table 2. On the basis that the preclinic pregnancy rate of our patients was similar to that commonly reported (table 3), the reduction in fertility in the Johns Hopkins study would be of the order of 85 to 90 per cent.

### SOUTH CAROLINA STUDY

The prescription of contraceptives on a rather large scale has been under the supervision of one of us (R. E. S.) in the clinics for postnatal patients and those undergoing antisyphilitic treatment under the South Carolina State Board of Health. The clientele of these clinics is largely rural Negro, averaging in education about fifth grade in school. Obviously, fitting of diaphragms was beyond the scope of the limited personnel with the large population they had to serve, and thus was reproduced on a large scale the problems of city clinics, with a possible difference of mental level.

acceptability of the material, the extent to which a patient was interested in contraception and the ability of a group to use material regularly. None of these are pertinent to our inquiry, which was primarily directed at the percentage of reduction of fertility which could be brought about by regular use of the material distributed.

Some observers have tended to discount the South Carolina figures because of the fact that we do not include irregular users. This, it seems to us, is no more fair than evaluation of the effect of iron in simple hypochromic anemia on the basis of the mass distribution of iron and then recording the change of hemoglobin regardless of whether the patient used it occasionally, rarely or not at all. Because of the type of patient to whom material was distributed, there was necessarily in the group a certain number not convinced of the need for pregnancy prevention, because of superstition or other reasons, and some mentally incapable of carrying out the simplest directions except under supervision. Many of them were careless with the

TABLE 3.—*Contraceptive Efficacy of Various Jellies and Creams, Used Without Diaphragm, and of Suppositories, in South Carolina Study*

| | (1) Jelly "A" * | (2) Cream "A" | (3) Suppository "B" | (4) Jelly "C" | (5) Cream "C" | (6) Suppository "D" | (7) Jelly "D" | (8) Jelly "D" | (9) Suppository "D" | (10) Sponge and Powder | (11) Jelly "E" | (12) Suppository "E" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A. Number of months | 16 | 37 | 18 | 12 | 26 | 24 | 24 | 12 | 12 | 25 | 16 | 33 |
| B. Number of patients | 49 | 180 | 190 | 182 | 180 | 170 | 100 | 70 | 93 | 41 | 61 | 197 |
| C. Number of preclinic pregnancies | 243 | 1,158 | 1,191 | 811 | 980 | 587 | 901 | 461 | 537 | 215 | 369 | 898 |
| D. Preclinic exposure to pregnancy (woman-months)† | 2,695 | 13,461 | 15,414 | 12,446 | 10,285 | 9,581 | 11,549 | 6,520 | 5,714 | 2,255 | 3,294 | 11,346 |
| E. Preclinic pregnancy rate ‡ | 108 | 103 | 92.7 | 78.2 | 114 | 73.5 | 93.6 | 84.8 | 113 | 114 | 113 | 95.0 |
| F. Corrected clinic experience (woman-months)† | 571 | 3,491 | 2,116 | 1,374 | 2,948 | 3,302 | 2,709 | 285 | 537 | 664 | 641 | 2,450 |
| G. Unplanned pregnancies (method failures) | 1 | 12 | 14 | 2 | 21 | 1 | 12 | 4 | 2 | 2 | 3 | 5 |
| H. Clinic pregnancy rate § | 2.1 | 4.1 | 7.9 | 1.7 | 8.5 | 0.4 | 5.3 | 17 | 0.5 | 3.6 | 5.6 | 2.4 |
| I. Effectiveness: reduction in fertility through clinic ‖ | 98.1 | 96.0 | 91.5 | 97.8 | 92.6 | 99.5 | 94.3 | 80.0 | 99.6 | 96.8 | 95.0 | 97.5 |

* The letters ("A," "B" etc.) are employed to preserve anonymity of manufacturers. The same make of jelly or suppository was sometimes used in different studies, as in columns 7 and 8 and in 6 and 9, but since the circumstances varied the results are kept separate.

† From dates of marriage or from first pregnancies to date of arrivals at clinic, less ten months for each full term pregnancy and appropriate deductions for premature deliveries and miscarriages.

‡ Pregnancies per hundred woman-years as calculated by formula cited in table 1 $(1200 \times \frac{C}{D})$.

§ Pregnancies per hundred woman-years as calculated by formula cited in table 1 $(1200 \times \frac{G}{F})$.

‖ $\frac{E-H}{E} \times 100$.

During the years 1941-1947 various methods were used, with the results shown in table 3. Here it may be seen that the South Carolina study represents a composite of twelve separate investigations, in which various contraceptive agents were employed. The number of patients followed (line B) ranged from 41 in one investigation to 197 in another, with a grand total of 1,573 women followed. The women-months of exposure while the contraceptives were being used (line F) varied between 571 and 3,491, with a grand total of 21,088. Seventy-nine conceptions occurred (summation of line G). By reading line H across it will be seen that the conceptions per hundred years of exposure were surprisingly low, the over-all average for regular users of the methods being 4.5.

The figures, it should be noted, are from those claiming to be regular users only, as this group seems the logical one for evaluation of the pregnancy preventive factors concerned. A study of reports from irregular users might throw light on various phases, such as material and allowed it to be destroyed or, where mechanical appliances, such as applicators, were essential, lost them, broke them or allowed them to be filled up with dried material so that they were unfit for use.

It is true that we do not know to what extent regular and unremitting use was the practice of those who did not become pregnant; nor do we know how to arrive at the answer to this question. It is possible that many of the women were irregular in their practice, and their being relatively or completely infertile may have served to give a higher figure than would be derived with all the facts available. However, it is believed that in a study of this sort, covering so many patients over so long a time, the factor of irregular use not followed by pregnancy is a fairly constant one, running through the series.

Effectiveness measured by reduction in fertility is rather high in this series. Certain factors entered into the success achieved which probably were not present in other series. In the first place, we learned by experience not to count a patient as an active user until she had at least two regular periods after being supplied.

4. Beebe, G. W.: Contraception and Fertility in the Southern Appalachians, Baltimore, Williams & Wilkins Company, 1942.

This eliminated patients who were pregnant at the time they were supplied, which, in an earlier series, was found to be around 8 per cent. We felt it unfair to the material to blame it for its lack of spermicidal qualities until we found that the patient was not pregnant when she began to use it. This rule also had the value of eliminating from our list women who were only mildly interested who often caused us to wonder, when they became pregnant shortly after they had been supplied, whether they had ever used the material. The one important reason for the success achieved in this series was that the patient was seen either at the clinic or at home not less than every six weeks and was checked as to supplies on hand, so that she would not be out of material and also to determine whether or not she was using it. These visits served to encourage the patient in the use of the material or to report its nonuse and played the same useful role that the frequent visits to the office during her prenatal care afford in encouraging the patient to carry out the obstetrician's directions. We rather deliberately put the study shown in column 8 in a clinic where it was impossible to have these frequent visits. The material was given out to the patients, and they were instructed to return for more when they needed supplies; no special effort was made to encourage them to use it, since, in that county, health department personnel was rather limited and none of the nurses could give time to it. When the results in this county are contrasted with those in column 7 with the same material, we see the recurring figure of approximately 20 per cent difference in effectiveness, which we attributed to lack of use or irregular use where the indifference of the patient was not overcome by the encouragement of the nurse visitor.

An interesting by-product of this study answers rather satisfactorily the question as to whether these materials tend to produce sterility. We found that there were certain regular intervals when we could expect pregnancy following irregular use. These occurred in the third, twelfth and eighteenth months. It is during the first three months that the irregular user first comes to light. Again, at the twelfth and eighteenth months many of the patients have felt secure that they would not become pregnant. They were unable because of their mentality to connect the lack of conception to regular use in a direct causal manner and often became irregular users. We found in these patients conception apparently took place within two months after irregular use became the rule; in a number of cases in which contraception was prescribed for the spacing of conception and another pregnancy was desired, there were no reported instances where there was failure to conceive. While this feature was not followed out in any extensive manner so that percentage results could be published, we certainly were impressed with the observation that sterility was not increased in this series by the use of the material.

It would be highly improper to draw any conclusions as to the relative effectiveness of the various methods listed in table 3 based on percentages, since careful analysis of the figures shows that these differences are more apparent than real. Often a contraceptive agent showed better results when subjected to a twelve month study than to one of twenty-six months, and it is possible that during the twelve months' study, some of these patients were relatively infertile and might not have become pregnant had they not used any contraceptive. However, it must be recalled again that effectiveness depends primarily on acceptability and, in general, the simpler the method the more acceptable and, therefore, the more effective. We believe, therefore, that a suppository containing the same material found in a cream or a jelly will prove more effective on a large scale because its use is simpler.

## SUMMARY AND CONCLUSIONS

Two separate studies are reported evaluating the efficacy of certain simple methods of contraception which do not entail the use of the diaphragm—one carried out in Baltimore and the other in Columbia, S. C., and vicinity.

In Baltimore 333 women, who used a suppository containing phenylmercuric acetate as the only contraceptive agent, were followed for intervals which ranged between six and twenty-eight months. The total period of exposure to pregnancy of these women while under observation was 4,210 woman-months. Fifty-seven conceptions took place, or 16.2 per hundred woman-years of exposure. In 18 of these 57 cases the woman acknowledged failure to use the suppositories on one or more occasions. Subtracting these, there were 39 conceptions which occurred despite the regular use of the suppositories, or 11.1 per hundred woman-years of exposure.

In the South Carolina study various types of simple contraceptives were used, including jelly alone, cream alone, suppositories, and sponge and foam powder. Fifteen hundred and seventy-three women were followed for intervals which ranged between twelve and thirty-seven months. The total period of exposure to pregnancy of those women while under observation was 21,088 patient-months. Seventy-nine pregnancies occurred despite the regular use of the contraceptive agent, giving an over-all average figure for the non-diaphragm methods of 4.5 conceptions per hundred woman-years of exposure.

As may be seen in table 2 the efficacy of the diaphragm and jelly in New York has been reported as low as 12 conceptions per hundred woman-years of exposure and in other cities of the United States from 15 to 18. On the other hand, in San Juan, Puerto Rico, the identical method has yielded a figure of 33. This shows clearly that the end results of any birth control program will depend more on personal factors (such as earnest desire to prevent conception and intelligence) than on the inherent efficacy of the procedure employed. The divergency of the figures reported in the present study doubtless reflects the same circumstance. Moreover, the sources of error in calculating results are many, and, all in all, statistics on the intrinsic value of any given method must be regarded as approximations only. Although the present study is vulnerable to all these criticisms, it at least raises the question as to whether the superior efficacy of the diaphragm over other procedures has not been greatly exaggerated. It may be that certain women, highly skilled in the insertion of the diaphragm, will receive better protection from that technic, but surely mass studies on the diaphragm have not shown greater efficacy than is reported in this paper by simpler procedures. Hence, the conclusion would seem inescapable that these latter methods—especially the suppository, the simplest of them all—deserve more widespread trial than they have heretofore received.

# ORDEALS OF PUBLIC HEALTH

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## HISTORICAL BACKGROUND

To decide who was guilty or who was right between two litigants, Birmanian tradition prescribed that two candles should be simultaneously lighted and given to the litigants. The first to go out was the one in the hands of the guilty or wrong party. A divinity was also supposed to protect the innocent person against the damage of a testing substance that he was made to swallow, or enable him to walk on red hot iron, or extract a ring from the bottom of a caldron full of boiling water or go through other such queer and extraordinary trials that people conceived in different ages and regions. They were the mediums of God's judgment: the ordeals, or *Dei iudicium*. Sometimes individual prowess was replaced by a duel, in which one of the two fighters was a gentleman or a champion who defended his lady or his master. Might is right: the strongest must win and deserves to win. Perhaps as a rebuttal, Voltaire said, many years later, that God was always on the side of the larger cannons. According to their respective idiosyncrasies the ordeals developed, in France, toward torture and in England toward the jury. In the former, truth was routed out by pain and, in the latter, guilt was ascertained by other citizens who might have cherished like passions or gone through conditions similar to those of the accused. These thoughts arise from the contemplation of the pubic health panorama. Doing so, one feels subjected to a test that would be unbearable if one were not sustained by an unshakable faith in the value of a sound public health policy.

## ROLE OF THE SANITARIAN

The sanitarian, on preparing his plans, proceeds much as the engineer: he looks for the data and analyzes, treats and presents them for his own use and for that of others, drawing from them the pertinent conclusions. He acquires this system, thanks to epidemiology which is essentially a methodology. As a physician he was not inclined to act so, for medical practice is, even today, an art, in which intuition is of more avail than method. In advanced countries, predictions are difficult, even granting that future events are mainly the results of the development and extension of those past and present. It must be so, since in the route of progress they open a path and mark a trail. On the contrary, we, the smaller and younger countries, navigate on a charted sea.

This land is propitious for the development of specialists. It has been said that specialization is a centrifugal force which is tearing culture asunder. But this does not matter now. What does matter is that it is enough for a medical officer in the United States to be well acquainted with the prevailing conditions of the population under his care to perform his tasks correctly. We, on the other hand, must divide duties among a handful of men and, consequently, have to know the most diverse facts and developments from the beginning to what was published in today's paper.

Read in the General Scientific Meetings at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 21, 1948.

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Because of lack of space this article has been abbreviated in THE JOURNAL. The complete paper will be found in the authors' reprints, which the authors will be pleased to send on request.

## ECOLOGIC DATA

It is true that North Americans are the product of many races which have blended in the crucible of this enormous country, and one can still perceive the existence of different groups. However, the phenomenon appears rather as the implantation of many grafts in the single Anglo-Saxon stem. A group of mature and peaceful people crossed the Atlantic and settled on this side. They brought with them many of their traditions and ways of living. That is why the War of Independence is called a revolution.

To Chile, on the contrary, came a conqueror, armed to the teeth and motivated by domination and plunder. Pedro de Valdivia brought with him a priest, because he was concerned about the future of his soul, but not a physician, because he came to kill and not to heal. The wounded soldiers were under the care of his lady friend, Inés de Suárez, who was the only woman of the expedition and by whom he never had children. With minor variations, the same story is repeated in Colombia, Perú, Mexico and in other regions. The first solid buildings of the new colonies were the fort and the church. The principal square of our settlements was called Plaza de Armas (Arms' Square). Surrounded by the church cathedral, the houses of the governor and of other prominent persons, it was devoted to soldiers' exercises and parades.

To counteract the vanity of those who say they are descendants of the Pilgrim Fathers of the Mayflower, an American humorist used to boast that his ancestors had been present among those who came to welcome them. The same must have been true of ours. In any case, in Latin America appeared new and different nationalities, which were the product of the mixing of two races which credibly had never been crossed before.

From the crossing of the Spaniards with the natives a new genetic line emerged, the most outstanding characteristic of which is its ability to adjust to new conditions of physical and social surroundings better than any of the parental strains. Together with the ecologic improvement, there is an increased virility from the reproductive standpoint. Large families—of 16, 20 or over—were common in the colonial period, but the death rate, already high, was raised by the new epidemic diseases introduced by the invader. Smallpox helped Cortés to conquer Mexico, and typhus was on the side of Pedro de Valdivia in Chile, to mention just two examples. Consequently, the population did not increase noticeably, but a new and solid stratum for the incipient nationality was formed. This is still intact in the rural areas and small towns. In larger cities new European blood has been added to dilute the native blood further. It has always been difficult for me (H. R.) to fill in the racial item in forms. I do not like to consider myself white, and I could hardly say that I am dark.

## GEOGRAPHIC ASPECTS

When I first arrived in the United States one of the most annoying experiences was that of being referred to professors of and courses on tropical medicine. In spite of the latitude of the northern part [1] of our country, we have no tropics, thanks to the cold Humboldt current, the one that prevents bathers from remaining too long in the water at our beaches.

The Humboldt current equalizes the temperature, so that there is only a small difference between the mean temperatures of the extreme north and of the extreme

1. The tropic of Capricorn passes through Antofagasta, and one seventh of the territory is in the tropical zone.

south, and the Cordillera wards off the continental influence of winds from the Argentine pampa. Consequently it never rains in the north of Chile, and toward the center it rains only during winter. At the peak of agricultural activity, in the summer, the land has to be irrigated, which entails great effort and is not always feasible. In certain regions our climate, as benign as in New Zealand and the islands of the South Pacific, is as pleasant to live in as it is adverse for agriculture.

### POPULATION FACTORS

As we have no tropical crops and have been proverbially poor since colonial times, the Spaniards did not bring Negroes. Chile did not have the slave market that left its traces in other parts of Latin America. When a Negro is seen in the streets people usually turn around to look at him and surmise that he is a boxer or a jazz band player. Nor do we see many Orientals, although there are plenty on the southern coast of Perú. Probably because of this, some of us are entirely lacking in racial prejudices. They are so foreign to our pre-

TABLE 1.—*Population Growth of Chile and the United States: Natural Increase and Immigration*

| Chile | | | | | United States of America | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Annual Increase per 1,000 Population | | | | | Annual Increase per 1,000 Population | | |
| Year | Population (Thousands) | Natural Total | Natural Increase | Immigration | Year | Population (Thousands) | Natural Total | Natural Increase | Immigration* |
| ..... | ..... | .... | .... | .... | 1790 | 3,929 | .... | .... | .... |
| ..... | ..... | .... | .... | .... | 1800 | 5,308 | 35.1 | .... | .... |
| ..... | ..... | .... | .... | .... | 1810 | 7,240 | 36.4 | .... | .... |
| ..... | ..... | .... | .... | .... | 1820 | 9,638 | 33.1 | .... | .... |
| ..... | ..... | .... | .... | .... | 1830 | 12,866 | 33.5 | .... | .... |
| 1835 | 1,010 | .... | .... | .... | 1840 | 17,069 | 32.7 | .... | .... |
| 1843 | 1,084 | 9.0 | .... | .... | 1850 | 23,260 | 36.3 | .... | .... |
| 1854 | 1,439 | 12.1 | .... | .... | 1860 | 31,502 | 35.4 | 24.2 | 11.2 |
| 1865 | 1,819 | 11.5 | .... | .... | 1870 | 39,904 | 26.7 | 19.4 | 7.3 |
| 1875 | 2,219 | 22.0 | .... | .... | 1880 | 50,262 | 26.0 | 19.0 | 7.0 |
| 1885 | 2,492 | 12.3 | .... | .... | 1890 | 63,056 | 25.5 | 15.1 | 10.4 |
| 1895 | 2,804 | 12.5 | .... | .... | 1900 | 76,129 | 20.7 | 14.9 | 5.8 |
| 1907 | 3,229 | 15.1 | .... | .... | 1910 | 92,267 | 21.2 | 9.6 | 11.6 |
| 1920 | 3,824 | 18.4 | .... | .... | 1920 | 105,711 | 15.5 | 9.3 | 6.2 |
| 1930 | 4,467 | 16.8 | 15.0 | 1.8 | 1930 | 122,775 | 15.6 | 9.3 | 6.3 |
| 1940 | 5,167 | 15.7 | 14.3 | 1.4 | 1940 | 131,410 | 7.0 | 6.3 | 0.7 |

* From Hill, J. A.: "Composition of the American Population by Race and Country of Origin, Ann. Am. Acad. Polit. & Soc. Sc. **188**: 177-184 (Nov.) 1936.

occupations that no item for race is included in the census forms in Colombia, Venezuela and Chile.

Our Indians were less civilized than their neighbors and of extraordinary courage. Most of them preferred being killed to surrendering, and we probably have less native blood than other nations, only that of the basic layer we already mentioned. This is true of the southern triangle of the continent: Uruguay, Argentine and Chile. In Perú the indigenous population constitutes approximately 50 per cent, and in Mexico a handful of Europeans maintain a precarious balance with the original inhabitants. The conflict looks sharper, considering that the Indians were actually worthy and cultured. No society, to our knowledge, has attained a clearer or more intellectual concept of the state than the Inca; it is hard to conceive a more daring engineering with simpler elements than that practiced by the Mexicans or Bolivians, and whoever values the pleasure of a beautiful combination of colors may well go to Guatemala. It is comprehensible for those countries to talk of Indoamerica, an idea hard to grasp for Uruguayans, Argentineans and Chileans.

When one goes back home from the States there is always an American who asks to be remembered to a Restrepo in Bogotá or to a Souza in Río de Janeiro. It is explainable, because one thinks of Latin America as the United States of the South, which it should be but is not. Our evolution has been conditioned by geography, which has raised tremendous difficulties for communications and has obliged us to remain apart and become differentiated from one another. Previous to the advent of the airplane, Caracas and Asunción were absolutely remote for us. In colonial times Spain compelled us to trade exclusively with her, forbidding intercolonial commerce. The bilateral treaties of the United States have not contributed to this end either.

Chile has grown gradually and should have, by 1950, some 6,000,000 inhabitants.[2] The population increase has been slow, because the increase has been due mainly to the vegetative growth or natural increase, that is, the balance between births and deaths. We have not received immigration waves of hundreds of thousands as in this country and, to a similar extent, in Argentine. Our largest inflow took place toward the middle of the nineteenth century, consisting of a handful of intellectuals who were fleeing from Europe after the failure of the liberal uprisings of 1830, 1840 and 1848. It determined the development of the southern part of Chile, which has been called, with obvious exaggeration, Naziland. A comparison of census results (table 1) of the United States and Chile will shed light on the rate of growth in general, as well as that corresponding to natural increase in both countries.

This number of censuses, an exception in America, may be surprising to some. By way of a historic curiosity, we may mention that Cuba and Puerto Rico each had one, in 1764 and 1765, respectively, but up to now the system has not taken root in our countries. As far as South America is concerned, Brazil, Venezuela, Colombia, Ecuador, Peru, Bolivia and Paraguay had, in 1940, data on only part of the territory and estimations on the rest. Only Uruguay, Argentine and Chile are in a position to carry out nominal and direct census. For other reasons, the two former have not taken one since 1908 and 1914, respectively. We understand that Argentine has completed one recently and 1950 has been set for the census of the Americas, the importance of which cannot be overestimated.

Since Pearl's time [3] we know that population growth, be it of men or banana flies, follows a certain pattern, known as the logistic curve.[4] It sounds absurd and incredible until the data are projected on a curve. The similarity in the history of population growths of different countries is really astounding. At the start, birth and death rates—from infant mortality as well as from all causes—are always high. Because of a surplus of births over deaths, the population increases gradually at first and gains speed as the difference

2. Chile had 5,820,695 inhabitants Jan. 1, 1948.

3. Pearl, R., and Reed, L. J.: On the Rate of Growth of the Population of the United States Since 1790 and Its Mathematical Representation, Proc. Nat. Acad. Sc. **6**: 275-288 (June) 1920.

4. The mathematical formula was first established by the Belgian mathematician Verlhust. The curve describes the phenomenon so well that some authors have spoken of a law of population growth (Pearl and Reed), which others question or do not accept (Wilson, E. B., and Puffer, R. R.: Least Squares and Laws of Population Growth, Proc. Am. Acad. Arts & Sc. **68**: 285-382 [Aug.] 1933). The logistic starts from a population that, at the beginning, grows little in absolute numbers (the lower asymptote), whose growth first increases rapidly and then recedes progressively, until around the inflection point the growth is stabilized. When the population has come to a standstill the maximum limit has been reached, that is to say, the greatest number that the region can maintain with the resources at its disposal and within predictable progress. Naturally, this limit is not absolute and can be removed or modified by the influence of important changes. This is what happened, for instance, in Puerto Rico, beginning with North American domination (Janer, J. L.: Population Growth in Puerto Rico and Its Relation to Time Changes and Vital Statistics, Human Biol. **17**: 267-313 [Dec.] 1945), and in Germany, with the industrialization that followed victory after the Franco-Prussian war (Pearl, R.: The Curve of Population Growth, Proc. Am. Philos. Soc. **63**: 15-17, 1924).

becomes more pronounced. Later it diminishes to the extent of reaching a stabilization phase and even a decline.[5] Its shape is suggestive of a plane that takes off. First it runs along the field and then gains altitude and rises until it levels off.

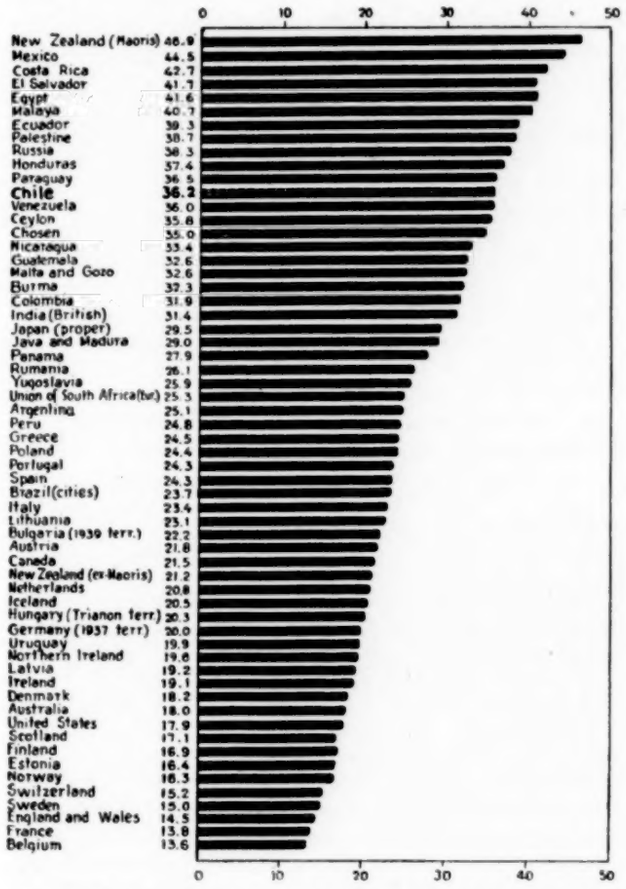


Fig. 2.—Crude birth rates (per 1,000 population) in sixty countries for 1940. (The data in this and other charts [figs. 3 and 4] were obtained from the Summary of International Vital Statistics for 1937-1944, United State Public Health Service national office of vital statistics.)

A comparative graph of the growth tendency of the populations of France, United States and Chile would demonstrate that France is approaching stabilization and we are left far behind. But even if our present position is equivalent to that of the United States in 1875, it will not necessarily take us seventy years to reach her present situation, since nowadays everything moves at a greater speed and we know today much that the Americans then ignored. The same graph would reveal that we needed one hundred and fifty years to cover the logistic arc that the United States completed in 70. The realization that we are following the path of other nations, induces us to reassert that we are sailing on a charted sea.

In accordance with this conception, Chile is in the second phase of her demographic history. She has one of the highest birth rates (35 per thousand inhabitants (fig. 2) and her infant mortality (143 per every thousand live births) (fig. 3) and general mortality (17 per thousand) (fig. 4) are still very high. These rates have followed parallel tendencies in all countries whose history is recorded, with the exception of New Zealand. They naturally produce a young population with a small life expectaney. Actually, ours was, in 1940, 41.8 years,[6] a small figure compared with that of the United States, but similar to that of other Latin American countries.[7]

With the age distribution that occurs in Chile, infectious diseases, and particularly tuberculosis, should prevail and chronic and degenerative diseases should be less frequent. Infant mortality, together with tuberculosis mortality, constitute approximately 50 per cent of all deaths, a feature which should set the North in our sanitary compass. On the other hand, cancer is not such a problem, although chances of dying from it are the same in every age in both countries. Youth also shapes people's behavior and this fact probably explains why our political organizations are neither very stable nor very serene. Fortunately, Chile has a solid administrative setup, in such a way that rulers and politicians as individuals do not usually modify the main direction of the country. That is why we are certainly the best behaved country in Latin America.

It is said that when enterprises are in the hands of young persons many mistakes are made and when managed by older persons nothing is achieved. The former may still be our condition, and probably the

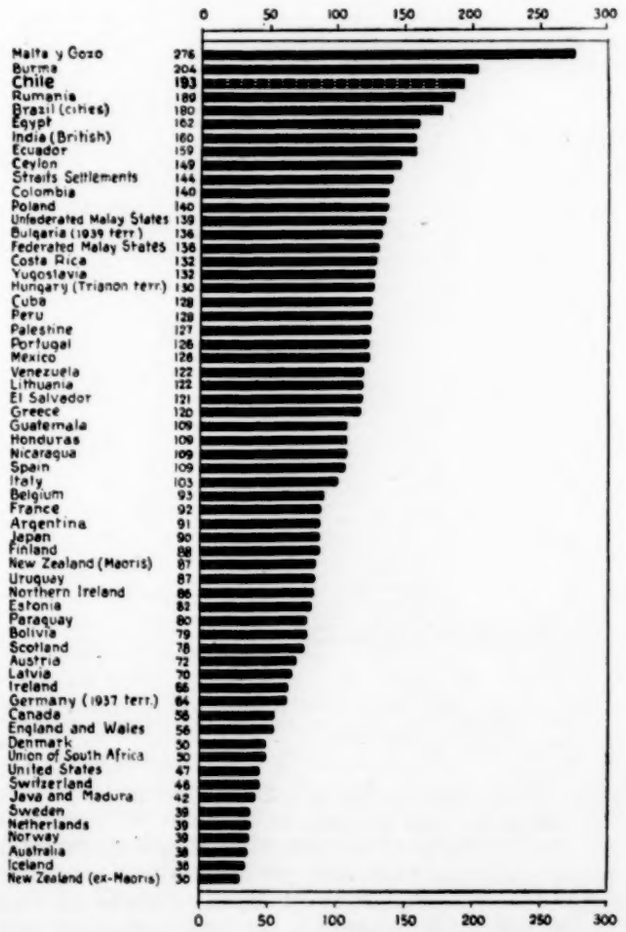


Fig. 3.—Infant mortality rates (based on the number of deaths reported of infants under 1 year of age per 1,000 live births) in sixty countries for 1940.

United. States has not yet reached the latter. In any event, a large proportion of persons who are intellectually and economically mature makes it possible

5. Dublin, L. I., and Lotka, A. J.: Length of Life, New York, Ronald Press Company, 1936, pp. 242-277.

6. Cabello, O.; Vildósola, J., and Latorre, M.: Tablas de vida para Chile: 1920, 1930, 1940, Rev. chilena de hig. y med. prev. **8**: 103-136 (Sept.) 1946; **9**: 113-157 (June) 1947.

7. Dunn, H. L.; Eldridge, H. T., and Powell, N. P.: Demographic Status of South America, Ann. Am. Acad. Pol. & Soc. Sc. **237**: 22-33 (Jan.) 1945.

to have better trained workers and higher salaries, continuity in commercial and industrial concerns and, consequently, a higher standard of living.

As we are few and we die young, it would be advisable to prolong our productive period. In the United States compulsory retirement is necessary, since older persons who are still strong have to step aside, in order to leave their places vacant for younger folk. For us, conditions are the opposite. Notwithstanding, our social laws give great facilities for retirement and our national budget is unduly burdened with pensions for persons who should be working for the community.

It is a common fallacy to believe that national wealth depends on a growing population and that it is therefore necessary to be concerned with the magnitude of birth

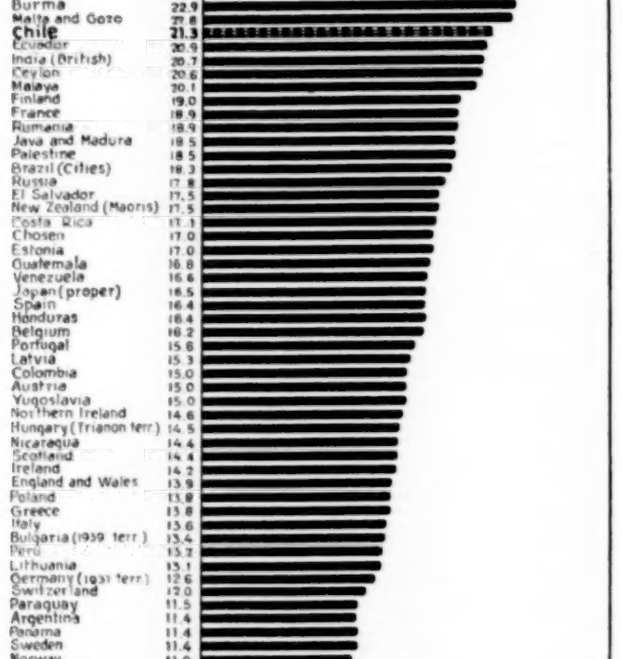


Fig. 4.—Crude death rates (based on the number of deaths reported per 1,000 population) in sixty countries for 1940. (Unless otherwise specified, war losses are included.)

rates. According to Raymond Pearl, Dunn says that our planet is going through an epidemic of population growth. In fact, toward the middle of the sixteenth century it held some 445 million persons, and this figure has now reached two billions. This means that in the last three hundred years, one-thousandth part of the known existence of man, the world population has been increased about five fold. It continues to grow at a rate of 1 per cent annually, i. e., about 20 millions. The human species is passing through what zoologists term a breeding storm, which may be attributed to the progress of science that has conquered uninhabited regions, perfected crops, developed new sources of energy and performed other extraordinary feats.

Comparing the active population of Chile with that of the United States, we see that here a larger proportion is employed in manufacturing and 18 per cent in agriculture, against 34 per cent in Chile. Chile should then be classified as an agricultural country although, as we have already stated, topographic and climatic conditions are rather unfavorable. The contradiction is explainable, because the mining companies are in the hands of foreigners who take away the raw material, returning only the costs of mining and not those of manufacturing and elaboration.

From a public health point of view, the nations of Latin America could be classified in three groups: (1) Those who have a relatively homogeneous population and many persons with a high standard of living, plus an abundance of resources, and no hinterland. In those countries tropical diseases do not exist or are of little consequence. Whoever goes to Montevideo, in the purple land of Hudson, will find a European city transplanted to our continent, and in many aspects Argentine has a higher standard of living than the United States. (2) The second group is the opposite of the first. (3) The third is similar to the first, but has a low standard of living complicating sanitary problems. Here we place Chile.

### ANALYSIS OF MORTALITY RATES

In reality, Chile has no sanitary problems due to its geography. They are all derived from human convergence and civilization or, shall we say, lack of civilization. There were some malarial spots in the valleys encased in the northern deserts. They were eliminated by an efficient sanitary campaign and now require only control. On Easter Island, in the middle of the Pacific, there is a handful of lepers forgotten by the gods. Toward the south there is hookworm in the coal mine shafts which extend under the sea and provide a humid and warm atmosphere propitious to the worms. The hookworm, it may be mentioned is the Ankilostoma duodenalis from Europe and not the Necatur Americanus of this continent, because these mines were developed by Scotsmen who brought the worm. It is rightly said that the visiting card records one's name and the intestinal parasites the place of one's origin. Recent investigations have brought to light endemic centers of Chagas disease, the extent of which has not yet been ascertained. In spite of the fact that the whole country is a coast line, there are cases of endemic goiter in some regions where the mountain ranges ward off the sea breezes, but not any of these factors or all of them put together really weigh in our sanitary scales.

Tropical diseases enjoy a well deserved universal prestige. Huge quantities of money have been allotted to them because their eradication suited purposes of economic development and colonization. The truth is that if the same generosity and aggressiveness had been deployed against syphilis, for example, the situation would now be different. The same happens with the former as with cattle diseases. Even in our country there is always money to fight foot and mouth disease or anthrax, but not always for human problems. This state of affairs induced Theobald Smith to say that farmers are more interested in the health of their cattle than in that of their children, which statement was no doubt a sign of momentary despair.

With apparent pride we Chileans claim to have one of the highest infant mortality rates in the world. We actually appear on the list after Malta and Gozo and Burma which cannot be taken into account (fig. 3). These high rates can be explained only if we accept

that among us a deficient public health service exists side by side with a good organization and much honesty in the recording and publication of statistical data. As a matter of fact, there have been eleven censuses from 1835 to 1940. Long before the whole of the United States was included in the registration area, we knew of all deaths in our country, since it is forbidden to bury a corpse without exhibiting a death certificate.[8] Although still defective, birth registration is stimulated by the social laws which grant family allowances according to the number of children. Because medical services attend a considerable proportion of the population, we have fairly reliable information on venereal diseases, tuberculosis and heart diseases, that is, those within the province of our social laws.

Incidentally, we may point out that Chile is the pathologist's paradise. The approximately thirty thousand hospital beds that we have are dependent on a central authority, and all patients who die in them are subjected to autopsy. For this regulation to be waived a judge's permission must be obtained, which time does not always allow. Foreign doctors who visit us are always surprised by the number of autopsies and the ample possibilities for holding joint meetings and investigations on clinical and pathological subjects.

Do not believe that I am being carried away by national sentiments. There is no plausible reason for Chile, with a homogenous race and benign climate, to have a higher infant mortality rate than some of her neighboring countries that do not enjoy these privileges and are not more civilized. In some of these, infant mortality has been halved just because the government has changed hands and much of the information published is based on estimations or surveys undertaken at a given moment. It is amusing sometimes to read the commentaries of some of those terribly lofty English newspapers on the high number of crimes or passion tragedies that there are in Chile. As a matter of fact, we are not more criminal and probably not more passionate than other American nations, but we record our data and are not self conscious about publishing them.

Nevertheless it cannot be denied that our infant mortality rate was excessive, so much so that it came down considerably within the last few years under the influence of rational measures: from 226.4 in 1936 to 142.8 in 1946.[9a] An amendment introduced in social legislation in 1937 allows for the care of working women and workmen's wives during pregnancy and childbirth, and of their children during their first two years of life. Thus, 25 per cent of the children of this age group and 16 per cent of the pregnant women are under supervision. This control includes medical attention as well as a supply of milk. For the specialists an interesting detail is here pointed out. The causes of infant mortality are ordinarily classified in three large groups: the enteric infections of the summer, infections of the respiratory tract in winter and, thirdly, causes peculiar to newborn infants. In countries with bad sanitary conditions and high infant mortality rates, enteric infections predominate and are the first to be reduced when measures are taken. The infections of the respiratory tract follow, and structural causes are prone to increase in proportion and absolutely under the influence of modern living, childbirth with medical interference, obstetric interventions and lying-in hospitals. In accordance with the general principle, enteric infections have predominated in Chile, but the descent has been due mainly to causes peculiar to newborn infants.

Chile has a very high rate of illegitimacy, around 30 per cent; the rate of Caracas is, however, 60 per cent. This naturally affects the infant mortality rate, but not so much as it would in the United States and Western Europe, because among us it is not necessarily the consequence of loose morals. Many couples, joined in a stable monogamous relationship, simply do not bother to get married. That influence may also be exaggerated because among babies born out of wedlock there is a predominance of first-born infants which are the ones most likely to die. Our families are still large, and the seventh or eighth child runs a worse risk. This fertility implies that women begin to procreate earlier and finish later than in the United States, and in the extreme ages the risks are noticeably greater.

Our tuberculosis mortality rate is shamefully high and holds the second place among all causes of death. Although we have more beds per person than the United States has,[10] these are insufficient compared with the number of patients.[11] The rule holds for all Latin America, probably with the single exception of Venezuela. To protect the tuberculosis patients we have a special set of laws, according to which all our workers and employees who suffer from curable tuberculosis have a right to rest, receiving full salary, until the disease has been cured or become incurable. The sums of money that this work and others entail are insufficient for the necessities but large for our economic possibilities. Their effect is just beginning to be felt in the mortality curves that have remained high and horizontal for the last forty years. It may be due to the fact that they have been carried out during the epidemic phase, that is to say, when the infection was propagated profusely owing to industrialization. The mortality curve has a cyclic tendency, with an oscillation period of about thirteen years, a commentary on which does not belong here.[11]

If in France Mademoiselle Marie Petit marries Monsieur Jean Simon she becomes Mme Marie Simon née Petit. If in the United States Miss Mary Smith marries Mr. Peter Jones she becomes Mrs. Peter Jones or Mrs. Mary Jones or Mrs. Mary Smith Jones. If señorita María Pérez marries Juan Torres she becomes señora María Pérez *de* Torres. A somewhat loose interpretation of these facts may allow us to surmise that the French and American customs wanted the personality of the woman to merge with that of her husband and form a new one. The Spanish custom, on the contrary, seems to want the woman to become merely a possession of the man. Keep in mind this symbol to understand the problem of our venereal diseases, which are also prevalent and will not diminish very noticeably unless we take firm steps to put an end to prostitution. If you say something of this sort in your countries, your audience will shrug their sholders and take you for a dreamer.

8. Cabello, O.: Población y natalidad, Rev. chilena de hig. y med. prev. **6**: 221-258 (March) 1944.

9. (*a*) Romero, H., and Moroder, J.: La Población y el medico: Los recursos económicos de la colectividad; VI. Mortalidad infantil, Prev. Soc. **13**: 377-394 (Oct.-Dec.) 1946.

10. In 1940, there were in Chile 0.9 free beds per thousand inhabitants and in the United States 0.63 free and 0.76 between free and paid beds.

11. Romero, H., and Moroder, J.: La población y el medico: Los recursos económicos de la colectividad; VII. Lucha contra la tuberculosis, Prev. Soc. **14**: 40-54 (Jan.-March) 1947.

In 1940 Chile organized the National Service against Venereal Diseases, pooling the resources of the different institutions and establishing a uniform plan. The first obstacle to be overcome was the individualistic tendency of the doctors, who would rather rely on their own experience than on the most overwhelming statistical data. The program produced immediate effects on morbidity rates, especially on new infections. Moreover, Chile, which is the only country south of the Rio Grande that prepares neoarsphenamine and oxophenarsine hydrochloride for its own consumption and for exportation, was the second country after the United States to accumulate 1,000 cases of massive treatment.

In 1945 the prevalence of syphilis was similar in the United States and in Chile. Thus, the National Medical Service for Employees found 5.2 per cent of positive serologic reactions in 112,000 persons who came for their first examination. In the first 2,000,000 conscription examinations, the rate of positive reactions in the United States was 4.6: 18 per cent among whites and 24.5 per cent among Negroes. The decrease in syphilis mortality can be seen in table 2.

TABLE 3.—*Expectation of Life at Birth*

| Area | Period | Complete Expectation of Life at Birth, Yr. |
|---|---|---|
| Chile | 1939-1942 | 41.8 |
| Chile | 1929-1932 | 40.6 |
| Chile | 1919-1922 | 31.5 |
| Argentina (Buenos Aires) | 1914 | 46.4 |
| Brazil (federal district) | 1939-1940 | 43.0 |
| Brazil (São Paulo) | 1939-1940 | 50.1 |
| Colombia (7 departments) | 1939-1941 | 46.3 |
| Costa Rica | 1927 | 40.7 |
| Mexico | 1929-1933 | 37.2 |
| Peru (Lima) | 1933-1935 | 39.0 |
| Venezuela (Caracas) | 1937-1939 | 44.2 |
| United States | 1939-1941 | 63.6 |
| England and Wales | 1937 | 62.3 |
| France | 1933-1938 | 58.8 |
| Germany | 1932-1934 | 61.3 |
| Spain | 1930-1931 | 51.2 |
| Russia (Europe) | 1926-1927 | 44.4 |

All the infectious diseases together do not weigh heavily on the sanitary scales [12] and, as everywhere, have diminished noticeably. If tuberculosis is included among them it naturally occupies an increasingly larger proportion, well over 50 per cent. In the United States as well as in Australia and New Zealand, for instance, national groups brought with them from Europe their genealogic lines and immunologic experience. They are what we would call Europe overseas, but we, a new race, suffered catastrophic epidemics. We had cholera, plague, smallpox and, recently, meningococcic meningitis. Thanks to compulsory vaccination, smallpox has disappeared completely, although it exists in the three surrounding countries. Typhus is virtually dominated and can never again reach epidemic proportions, because we have a good control service and experience in DDT (dichlorodiphenyltrichloroethane) application. The meningitis epidemic of 1941-1942 had a comparatively low fatality (10 per cent), owing to the rational use of sulfonamide drugs. As in other countries, the incidence of infections of the nervous system has begun to increase, such as encephalitis, poliomyelitis, and polineuritis.

As infant mortality and mortality rate for infectious diseases and for all causes diminish, life expectancy increases (table 3). Between 1920 and 1940 we gained 10.3 years: as a matter of fact, life expectancy at birth went up from 31.5 to 41.8 years.[6]

Because our life expectancy is low, we have that young population we spoke of. On the other hand, the probabilities of survival at 70 years of age are almost the same as in the United States and have hardly changed in one country and the other ever since we first had reliable information. Therefore, it is preposterous to say that in Chile, or in South America as a whole, people do not attain advanced ages. Indeed, those who manage to avoid the causes of the pathetically high rates of infant mortality, tuberculosis in adult age and other causes of death, and reach a mature age, have then even better probabilities of survival than have inhabitants of North America.

In 1940, our life expectancy was smaller than in the United States in 1900. We may well imagine that our curve will imitate that of the United States in some past period. Warren S. Thompson has repeatedly pointed out the demographic analogy between countries and said that "the past" of one may be "the future" of another.

There are other problems occupying a foremost position in our minds. The first of these is public health education, understood not as a specialty but as the embodiment of knowledge concerning health in the average education. Our expression seems more adequate: education for health (*educación para la salud*). It should be incorporated in high school education so that it reaches politicians. Until our citizen definitely gives up completely the fatalistic attitude and understands that it is possible to defend and promote health, our work will not be very rewarding.

It could be said that we must first improve the production and distribution of food stuffs. However, it seems much more urgent that the people learn how to eat. This is not a country for the gourmet, who may find more satisfaction in Argentine, Perú, Mexico, Chile and other countries; but the common diet is incomparably more rational than in any other part of America. Usually our people eat according to their prejudices and traditional habits. The practical application of modern knowledge in this matter would pay better dividends than any other activity.

There is plenty to be done concerning the housing problem. Much could be told of how our colonial towns are being modernized and about the patios disappearing, while small skyscrapers and apartment houses are being built. But these are essentially national affairs, and our sanitary functions consist mainly in convincing the authorities that neither civilization nor health is possible without acceptable dwelling places, that a large proportion of the citizens cannot build their own houses and that others cannot even pay to live in them, whether they buy or rent them.

Although a high proportion of the population has drinking water and adequate means for excreta disposal, our mortality rates for enteric infections are still too high. We have endeavored to reduce them by means of a permanent immunization campaign, which means, as we say, bread for today and hunger for tomorrow. Foreigners who visit us or come to stay among us are strongly advised to get vaccinated, as

12. Romero, H., and Moroder, J.: La población y el medico: Los recursos económicos de la colectividad; IX. Enfermedades infecciosas, Prev. Soc. **14**: 244-261 (July-Sept.) 1947.

they run far greater risks than we do. Recently efforts have been made to improve food control, diminish the number of flies and educate the population, measures that are making their influence felt. The considerable success of the Division of Health and Sanitation of the Institute of Inter American Affairs in our countries is largely due to the fact that they have contributed toward the progress of our water supplies and sewage systems. It would have been greater if they had not been so reluctant to bury money in the ground, an investment that is invisible but which produces handsome revenues.

COMMENT

Public health is today a science interesting and useful enough to attract persons of high quality. The mere enunciation of its achievements, its projects and unsolved problems could well be the subject of long discussions which would surely interest any cultured physician. For success, we need many more specialists, and to form them we have our School of Public Health, the achievements of which will make an attractive story. As just one example of what modern policy can produce, we may say that in one of our health units, founded and run with the help of the Rockefeller Foundation, the mortality rate among children under control is considerably lower and similar, or parallel, to that of New York. The foregoing account should lead one to the conclusion that Chile is a young country the characteristics of which correspond to a certain phase of demographic evolution and the sanitary conditions of which could be considerably improved by our taking advantage of foreign experience and applying it to our conditions and peculiarities. Money does not matter, because when well spent it can never be wasted. Besides, these expenses are self liquidating. On the contrary, it is important to convince both the politicians and the people that public health is no longer a mere expression of common sense but that it requires knowledge and technic. Doctors can help toward this end.

The reader will also have concluded that Latin America is a kaleidoscope. Large parts of it have a common origin, a mixture in different proportions of similar races and languages. Under the influence of geographic conditions and after over a century of independent life, they have become very much differentiated. Men of good will in our country believe that they should draw more closely together, among themselves and with Anglo-Saxon America. This objective will be considerably enhanced by the transportation and communication facilities and may be perfected by means of mutual knowledge and understanding. To this purpose we have devoted an enormous amount of time and effort.

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**Use of Anticoagulants in Coronary Thrombosis.**—On the basis of data compiled from 800 cases of coronary occlusion with myocardial infarction, it is concluded that patients treated with anticoagulant therapy in addition to the conventional forms of therapy experience a death rate and incidence of thromboembolic complications during the first six weeks period following an attack markedly lower than those experienced by patients treated solely by conventional methods. Anticoagulant therapy should be used in all cases of coronary thrombosis with myocardial infarction unless a definite contraindication exists. In the absence of hemorrhagic conditions the hazards from hemorrhage are not sufficient to contraindicate the use of anticoagulants in coronary occlusion, provided that there are facilities for adequate laboratory and clinical control.—From an address by Dr. Irving S. Wright delivered before the Graduate Fortnight of the New York Academy of Medicine, Oct. 5, 1948.

# Clinical Notes, Suggestions and New Instruments

## SPONTANEOUS RUPTURE OF THE STOMACH

### Report of a Case

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Spontaneous rupture of the stomach is a catastrophe which many surgeons and many more practitioners of other branches of medicine would not include among the possibilities if they were called on to attend a patient presenting the typical picture of this calamity. Of the 30 or more cases reported in the literature, there was not 1 case in which the condition was diagnosed before operation or autopsy; yet the picture is distinctiveand not presented by any other abdominal emergency. The reason for failure to name the accident at fault is undoubtedly lack of knowledge that it can occur. It is so rare that most practitioners have never heard of it and therefore do not list it as one of the possibilities when presented with the problem of diagnosis.

This case is presented not only as a contribution to the knowledge of the causes and characteristics of the condition, but also in the hope that some reader may remember the possibility if he is called on for treatment.

The following case is cited as a typical example of the picture presented by spontaneous rupture of the stomach, and also happens to be a case with the commonest antecedent train of events.

REPORT OF A CASE

A nun, aged 61, in the hospital with which I am associated, was accustomed to taking a dose of citrate of magnesia every few days to relieve abdominal discomfort which she attributed to chronic constipation. At 3 p.m. on May 7, 1946, she took one bottle of citrate of magnesia, and about 7:30 p.m., because she still had discomfort, she went to the hospital pharmacy and asked the pharmacist's assistant for sodium bicarbonate. She was given about a tablespoonful in an unusually large glass of water. Immediately after drinking it, she collapsed on the floor in severe agony, she became cyanotic and dyspneic; the skin became cold and clammy and the pulse imperceptible. The intern was called and noted severe abdominal tenderness and rigidity. The abdomen was silent. Her condition improved a little in that the pulse became barely perceptible, and she was scheduled for operation within two or three hours.

However, her condition became rapidly worse, continuing while she was on the operating table and before any anesthetic was administered, and she became unconscious. Decision was made to operate on account of the almost certain presence of a visceral perforation. Rupture of the stomach was not even considered, but the preoperative diagnosis was "perforation of a hollow viscus."

Some excess of fluid with some flakes of fibrin floated in it was seen, and the serosa was injected. Not until the lesser peritoneal sac was opened, however, was the diagnosis made. Here was found foamy white material, which was undoubtedly sodium bicarbonate with enclosed fine gas bubbles which boiled out through the incision in the gastrohepatic omentum. Chewed undigested food was delivered from the lesser peritoneal cavity by the handful. Meat and grapefruit particles were recognized. The rent in the stomach, about 5 cm. in length, was seen running longitudinally at the midportion of the lesser curvature. No evidence of disease of any layer of the wall was observed.

The laceration in the stomach was sutured, and, while the abdominal wound was being closed, the condition of the patient became rapidly worse, in spite of the administration of 600 cc. of plasma. Death ensued before the closure was completed.

COMMENT

The degree of shock, the intensity of the prostration and the suddenness of onset are dramatic and not simulated by any other type of perforation, not even by pancreatic necrosis, there being not quite the abrupt precipitation of these physical signs in the latter condition. Ruptured ulcer, aside from the probability of an antecedent history of ulcer, does not give the degree of severity of symptoms by a wide margin. Any case with the history of

ingestion of sodium bicarbonate followed by sudden abdominal pain and severe and dramatic onset of shock and prostration should be immediately considered a case of spontaneous rupture of the stomach.

The condition is rapidly fatal in the vast majority of cases. In 31 cases collected by Lemmon and Paschal [1] in none was the condition diagnosed preoperatively or before autopsy. Of the 31 patients only 5 were operated on and only 2 of these recovered. Of the ones not operated on, 2 recovered spontaneously, with abscess and fistula formation.

Spontaneous rupture of the stomach in the cases reported occurred along the lesser curvature, where the weakest part of the muscular wall would seem to be found. In my case, as well as the others reported, there was no evidence of any disease of the area. The mechanism of rupture appears to be a rather abrupt release of carbon dioxide caused by the action of acid on the sodium. The acid may be hydrochloric or acids of fermentation or, as in this case, the citric acid of the cathartic. The stomach is full in all cases. It is probable that there is associated pylorospasm prompting the ingestion of the sodium bicarbonate. The patient likely has some cardiospasm or closure of the cardiac end caused by angulation also, in which case the distention of a full stomach with sodium bicarbonate is so sudden that it cannot be released quickly enough through the natural outlets.

The literature on rupture of the stomach is not voluminous. Petry reported 8 cases in 1896 and comparatively few have been reported since that time. It appears to be of rare occurrence and fortunately so.

SUMMARY AND CONCLUSIONS

The following points can be deduced from an analysis of reported cases: Aside from trauma, rupture occurs from rapid release of gas in the stomach, a few from fermentation of gastric contents, but most from the release of carbon dioxide by the action of acids on ingested sodium bicarbonate. The stomach in this latter condition is always full. Some spasm of the pylorus and cardia probably is necessary. The shock and prostration are severe. The condition has never been diagnosed preoperatively, and the mortality rate is high.

1. Lemmon, W. T., and Paschal, G. W.: Rupture of the Stomach Following Ingestion of Sodium Bicarbonate, Ann. Surg. **114**: 997-1003 (Dec.) 1941.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

*The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.*

AUSTIN SMITH, M.D., *Secretary.*

**SULFADIAZINE** (See New and Nonofficial Remedies 1947, p. 120).

The following dosage form has been accepted:

PITMAN-MOORE, INDIANAPOLIS

**Solution Magmoid Sulfadiazine:** 30 cc., 60 cc., 360 cc. and 3.84 liter bottles. Preserved with benzoic acid 0.25 per cent.

**OLEOVITAMIN A-U.S.P.** (See New and Nonofficial Remedies 1947, p. 502).

The following dosage form has been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

**Capsules Oleovitamin A:** Each capsule contains 25,000 U.S.P. units of vitamin A derived from fish liver oils.

**DIHYDROXY ALUMINUM AMINOACETATE** (See THE JOURNAL, July 31, 1948, p. 1226).

The following dosage form has been accepted.

EATON LABORATORIES, INC., NORWICH, N. Y.

**Tablets Aspogen:** 0.5 Gm.

## Council on Foods and Nutrition

*This paper was prepared at the request of the Council and is one of a series appearing in* THE JOURNAL. *Later the entire series will appear in book form as the Council's Handbook of Nutrition.*

JAMES R. WILSON, M.D., *Secretary.*

### IODINE IN NUTRITION

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During the early years of the present decade, perhaps even in the still turbulent days of 1948, there could be seen on the highways of the Chinese province of Yunnan numbers of cretins, as well as other persons little more fortunate, displaying prominent goiters. Men and women working on the Burma Road were showing an incidence of thyroid enlargement often as high as 80 per cent.[1] Residence in the Yunnan district for as little as six months, it appears, would suffice to induce such deformity in susceptible persons.

For an understanding of this striking phenomenon, in many respects similar to the once epidemic proportion of goiter and cretinism in Berne, Switzerland, it is necessary only to remember that the Japanese were, in the early 1940's, still in control of strategic areas of China. As a consequence, the hinterland of China was cut off from its former coastal supply of salt with a high content of iodine. Not only the Yunnan area itself but also other large sections of Free China were thus forced to depend on Yunnan salt, which is very low in iodine content.[1]

This remarkable incidence of goiter in Yunnan, resultant to the military stranglehold on those areas furnishing the only supply of salt with a high iodine content, is no mere coincidence. The inverse relation between a high incidence of goiter and cretinism and the amount of iodine found in the soil of a given region, in its water, its salt and mineral deposits, and particularly in its food, has long been known. Repeatedly this observation has been supported by similar massive evidence.

Thus, it becomes necessary to appreciate the powerful role which iodine plays in human biologic processes. This element is found throughout the world in varying proportions. It occurs in minute quantities in the very air one breathes. It is dispersed in the water. It exists in the soil and in the rocks. It is present in nearly all living things, both plant and animal. Not the sea, as is popularly believed, but the earth's crust is the major storehouse of iodine.[2]

Endemic goiters are observed in great numbers among the inhabitants of those regions deficient in iodine. The highest incidences of goiter have been observed in the Alps, the Pyrenees and Himalayas, the Thames Valley in England, certain inhabited districts of New Zealand, in the region of our own Great Lakes and in the Pacific Northwest.[2b] Throughout the United States there occur varying degrees of available iodine,

From the Ohio State University, Columbus, Ohio.
Aided by a grant from the Comly Fund for Research of The Ohio State University.

1. Robertson, R. C.: The Problem of Endemic Goiter in Yunnan Province, J. Clin. Endocrinol. **1**: 285, 1941.
2. (*a*) Orr, J. B., and Leitch, I.: Iodine in Nutrition, Medical Research Council, Special Report Series No. 123, London, His Majesty's Stationery Office, 1929. (*b*) McClendon, J. F.: Iodine and the Incidence of Goiter, Minneapolis, University of Minnesota Press, 1939.

depending on local geologic conditions of the soil and waterways. A high incidence of goiter is especially noteworthy in the Central Plain of North America, where regional iodine is low. On the sea coasts, where large amounts of high iodine-containing sea foods are consumed, there is a minimum of endemic goiter.

The water of the Great Salt Lake resembles the ocean in its iodine concentration and yet, unlike the ocean, supplies neither vegetation nor fish for human consumption.[2b] Consequently, it should cause no great wonderment that the inhabitants of the Great Salt Lake area have a high incidence of goiter; for the problem of endemic goiter largely resolves itself into a consideration of the amount of mammalian iodine consumption within any given region.

Iodine is ingested essentially from the food supply and to a lesser degree from ordinary salt or from water.[2a] About 14 micrograms daily was formerly thought to represent the difference in iodine intake between goitrogenous and nongoitrogenous regions.[3] However, regional differences in iodine consumption have become even less pronounced as the interstate transportation of food, drinks, vegetables, fruits and fertilizers has increased.

The amount of iodine found in the local drinking water is a frequently used measure of the iodine content of the regional soil and consequently of its fruits, grains, grasses and vegetables. It is not important as a source of nutritional iodine save in unusual circumstances.[2a] Moreover, when the country is divided into sections according to the occurrence of iodine within its waters, it will be found that where the iodine content is low, the incidence of goiter is correspondingly high. Such regions are to be found in a section extending from Oregon to the western part of Maine and from Nevada to the western part of Virginia.[2b] The Michigan studies revealed that the incidence of goiter in a given locality varies inversely with the amount of iodine found in its water.[4]

The iodine in food is the single most important factor determining the extent of endemic goiter prevalent throughout a given area. Thus, it is readily understood why Japan, though geologically low in iodine, presents an outstanding example of a goiter-free area, while Formosa, similarly depleted in iodine, has a high incidence of goiter among its population. The absence of goiter in Japan results from a Japanese taste for seaweed, which is therefore extensively imported and consumed in large quantities.[2b] Seaweed is rich in iodine content.

In South Carolina, where the vegetables are considerably higher in iodine content than those of the Northern and Western states, the incidence of goiter is low.[5] However, the interstate importation of canned foods and other food products does not, to any apparent degree, help solve the goiter problem in the North and West, for the cotton-growing and tobacco-growing South as a whole, comprising a great part of the goiter-free United States,[6] fails to produce sufficient food and feed crops even for its own needs.[6b] Canned goods must therefore be imported from sections of the country where the soil is poor in iodine.[6]

The iodine concentration of the milk produced in a given locality is another good index of endemic goiter in that region.[7] The amount of iodine which the lactating mammal consumes and then puts out in her milk, in the absence of any supplemental iodine, depends on the amount of iodine in the soil and its vegetation.[8] Likewise, the egg is dependent on the chicken for its iodine content and the chicken on the products of the "good earth."[7b]

### IODINE CONTENT OF THE HUMAN BODY

A normal man weighing 70 Kg. may be reasonably estimated to contain about 50 mg. (less than a grain) of iodine. This is equivalent to about 1 part in 1,400,000 of body substance. Iodine thus forms less than 0.00008 of 1 per cent of the total body weight. Nevertheless, every cell in the body is said to contain some iodine.[9]

### IODINE AND THE NORMAL THYROID GLAND

The thyroid gland is a principal storehouse for the iodine of the human body. Weighing ordinarily about 25 Gm. and containing about 10 mg. of iodine, it normally maintains an iodine concentration of around 40 mg. per hundred grams. It was shown long ago by Marine and Lenhart that when this concentration falls below 10 mg. per hundred grams hyperplasia ensues and goiter is likely to develop.[10]

No other organ of the mammalian body has the power of iodine concentration possessed by the thyroid gland. The whole blood iodine averages less than 1 part in 25,000,000, while the thyroid gland normally contains approximately 1 part in 2,500. This indicates that the thyroid gland can concentrate the iodine it obtains from the blood by a factor of at least 10,000.

Within the colloid in the alveoli of the thyroid gland iodine is stored in a combined form with the amino acids, diiodotyrosine and thyroxine. These contain, respectively, 59 and 65 per cent iodine. The accepted facts of thyroid function indicate that iodine is selectively absorbed by the active thyroid gland. Furthermore, in some measure the glandular function is regulated by its iodine content. Studies with radioactive iodine have shown that ingested iodine is quickly brought to the gland by the blood stream and rapidly converted by the thyroid cells into complex organic compounds. Within a matter of only a few hours these organic iodine compounds, just manufactured by the cellular activity of the thyroid gland, may return to the circulation.[11]

A basic peculiarity of this regulating gland, first observed before the turn of the century,[12] is its low iodine concentration when its weight is high and, inversely, a high iodine concentration when its weight

3. Hercus, C. E., and Roberts, K. C.: The Iodine Content of Foods, Manures and Animal Products in Relation to the Prophylaxis of Endemic Goiter in New Zealand, J. Hyg. **26:** 49, 1927.

4. (*a*) Report of the Initial Meeting of the Study Committee on Endemic Goiter of the American Public Health Association, Detroit, June 14-15, 1941. (*b*) Study of the Effect of the Use of Iodized Salt on the Incidence of Goiter: First Official Report of the Goiter Survey of Michigan, J. Michigan M. Soc. **36:** 647, 1937.

5. Weston, W.: Foods in the Solution of the Goiter Problem, South. M. J. **23:** 479, 1930.

6. (*a*) McClendon.[2b] (*b*) Olesen, R.: Endemic Goiter, Public Health Bulletin, 192, Washington, D. C., Government Printing Office, 1929, p. 27. Opportunity or Calamity, editorial, Food Industries, **3:** 467, 1931.

7. (*a*) Orr and Leitch.[2a] (*b*) Shore, R. A., and Andrew, R. L.: Goiter in School Children: The Incidence of Goiter in School Children in Relation to the Amount of Iodine in Soil and Water in Certain Districts of the North Island in New Zealand, Bull. Hyg. **5:** 94, 1930.

8. (*a*) Shore and Andrew.[7b] (*b*) Meyer, J. H.: The Iodine Content of Milk, Thesis, Columbus, Ohio, Ohio State University, Department of Surgical Research, 1940.

9. Justus, J.: Ueber den physiologischen Jodgehalt der Zelle, Virchows Arch. f. path. Anat. **170:** 500, 1902.

10. Marine, D., and Lenhart, C. H.: Further Observations of the Relation of Iodine to the Structure of the Thyroid Gland in the Sheep, Dog, Hog and Ox, Arch. Int. Med. **3:** 66, 1909.

11. Perlman, I.; Chaikoff, I. L., and Morton, M. E.: Radioactive Iodine as an Indicator of the Metabolism of Iodine. I. The Turnover of Iodine in the Tissues of the Normal Animal with Particular Reference to the Thyroid, J. Biol. Chem. **139:** 433, 1941. Perlman, I.; Morton, M. E., and Chaikoff, I. L.: II. The Rates of Formation of Thyroxin and Diiodotyrosine by the Intact Normal Thyroid Gland, ibid. **139:** 449, 1941.

12. Baumann, E.: Ueber den Jodgehalt der Schilddrüsen von Menschen und Thieren, Ztschr. f. physiol. Chem. **22:** 163, 1896.

is low.[13] Moreover, the thyroid iodine content is low with either a high incidence of nodule formation or a high percentage of epithelial proliferation. It is low with increased height of the follicular epithelium of the thyroid gland, lymphocytic infiltration and with the occurrence of degenerative changes.[13b]

The iodine which a person absorbs from his daily food is the principal factor which determines the iodine content of the thyroid gland and overshadows other factors, such as species, age and sex. Small differences in the local food supply of iodine are reflected in the iodine content of the gland.[2a]

Since iodine intake is so largely dependent on the soil and consequently on plant iodine, the thyroid iodine concentration varies with the geographic distribution of iodine. Thus, in nongoitrogenous Texas the fat-free dried thyroid contains 6 mg. of iodine per gram, whereas in goitrogenous North Dakota it contains only 3.2 mg. per gram.[14] There are seasonal variations in the amount of iodine found in the thyroid gland,[13b] but these may be attributed to seasonal variations of the iodine available in the soils and foodstuffs.

### IODINE AND THE PATHOLOGIC THYROID GLAND

The ultimate cause of endemic goiter and its sequelae is not clear. The immediate cause is a deficiency of iodine, an element necessary in the production of the thyroid hormone with its high content of iodine. This iodine deficiency may be absolute, as in areas where the iodine intake is subnormal, or the deficiency may be relative.[15] Thus, iodine deficiency may ensue, even with a normally adequate iodine intake, whenever gastrointestinal absorption is inadequate. Other uncompensated circumstances, by interfering with the normal destination and metabolism of iodine, or by increasing the demand for this element, have the same end result. Infectious processes, the ingestion of toxic substances or of certain drugs and a diet high in calcium are among the known offenders. The physiologic stress of puberty, of pregnancy and of lactation increases the need for thyroid secretion. When these increased needs are met with an increased supply, resultant pathologic change is forestalled, as can be demonstrated in the thyroid histologic observations in pregnant animals fed sufficient supplemental iodine.[16]

The microscopic changes in the thyroid gland closely parallel the chemical observations.[13b] Baumann and Roos [17] and also Oswald [18] were the first to observe that if iodine is withheld compensatory hypertrophy of the thyroid occurs. They noted that the iodine content of the thyroid is proportional to the amount of colloid present and that in colloid goiter the concentration of iodine is significantly below that seen in the normal gland. When normal or goitrous thyroid glands obtained from iodine-deficient regions are compared with other normal or goitrous glands, it is observed that the thyroids from the goitrogenous regions are the largest and have the highest incidence of nodule formation, the smallest follicular size and the lowest iodine content.[13b]

If iodine is administered to a person who has either a normal thyroid gland or even colloid goiter, the iodine content of the gland increases with no notable change in its structure. When iodine is withheld from the experimental animal, the iodine content of the gland gradually decreases, and in the wake of thyroid lobectomy there will be hyperplasia of the remaining lobe. The administration of iodine prevents this sequence of events both prior to and following lobectomy.[10]

Remington has shown that it is possible to produce enlarged and hyperplastic thyroid glands in young rats fed for five weeks on a diet extremely low in iodine. The addition of iodine to their diet prevents the development of goiter. However, storage of iodine is insufficient in rats fed this supplement during their first four weeks of life, since it does not prevent the development of goiter when iodine is later withdrawn. Varying the calcium content of the ration given the rats, or its calcium-phosphorus ratio, does not affect the degree of goiter produced. Likewise, the omission or addition of vitamin D is of no consequence.[19]

### IODINE IN THE EXTRATHYROID TISSUES AND BODY FLUIDS

Iodine is present in organs other than the thyroid gland. It is also found in varying concentration in other body tissues and in the various body fluids. Its role there is less clearly understood. Of the total iodine content of the human body about one half can be assigned to the muscles, one fifth to the thyroid, one tenth to the skin and one seventeenth to the bones.[20]

Because of the close interrelationship of the other endocrines with the thyroid gland, their iodine content becomes even of practical interest. There is some question whether they actually exceed the nonendocrine tissues in iodine concentration. Certain studies indicate that they do.[21] More recent work on mammalian tissue iodine [13b] and on the iodine content of normal human tissues [22] was not confirmatory. Moreover, the "master gland," the pituitary, which bears a reciprocal relation to the thyroid, so well appreciated, has a low iodine content. This is similarly true of the central nervous system itself.[23]

Considerable importance has been attached to the role played by the liver with respect to iodine.[24] Nevertheless, its actual function in this regard is still an enigma. The conviction that this significant organ, which affects so many of the body's vital activities, also exerts an influence on the metabolism of iodine, arises from various experimental and clinical observations. Thus, bile is consistently high in iodine content,[23] and except for the thyroid and hair contains, in fact, the highest iodine concentration in the human body.[22] Moreover, elevation of the blood iodine, occasionally to a considerable

13. (*a*) Marine, David and Lenhart.[20] (*b*) King, J. D.: The Iodine Content of the Normal Thyroid Gland Correlated with Its Histology and the Iodine Content of Other Normal Body Tissues in Central Ohio, Dissert., Columbus, Ohio, Ohio State University, Department of Surgical Research, 1940.

14. Fenger, F.; Andrew, R. H., and Vollertson, J. J.: Geographic Location and the Iodine Content of the Thyroid Gland, J. Am. Chem. Soc. **53**: 237, 1931.

15. Elmer, A. W.: Iodine Metabolism and Thyroid Function, London, Oxford University Press, 1938.

16. Schmelling, J. W.: Over de normale en vergroote Schildklier geduren de embryonale outwikkeling, bij den pasgebirene en pasgeborene en bij het jonge Kind in Nederland, Dissert., Utrecht, 1934.

17. Baumann, E., and Roos, E.: Ueber das normale Vorkommen des Jods in Thierkorper, Ztschr. f. physiol. Chem. **21**: 481, 1896.

18. Oswald, A.: Ueber den Jodgehalt der Schilddrüsen, Ztschr. f. physiol. Chem. **23**: 265, 1897.

19. Remington, R. R., and Levine, H.: Studies on the Relation of Diet to Goiter, J. Nutrition **11**: 343, 1936.

20. Sturm, A., and Buchholz, B.: Jodverteilung im menschlichen und tierischen Organismus in ihrer Beziehung zur Schilddrüse, Deutsches Arch. f. klin. Med. **161**: 227, 1928.

21. Sturm and Buchholz.[20] von Fellenberg, T.: Versuche uber die Jodspeicherung in den einzelnen Organen, Biochem. Ztschr. **174**: 355, 1926. Maurer, E., and Ducrue, H.: Zur Kenntnis des Jods als biogenes Element, ibid. **217**: 227, 1930.

22. Libecap, I. L.: The Iodine Content of Normal Human Tissues, Thesis, Columbus, Ohio, Ohio State University, Department of Surgical Research, 1942.

23. King.[13b] Libecap.[22]

24. (*a*) Elmer.[15] (*b*) De Courcy, J. L.: Iodine Metabolism, Normal and Abnormal: Its Relation to the Reticulo-Endothelial System, Tr. Am. A. Study of Goiter, 1937, p. 133; Further Study of Blood Iodine Changes in Affections of the Gallbladder, Surg., Gynec. & Obst. **65**: 180, 1937; Iodine Content of Blood in Cholecystic Disease, Arch. Surg. **35**: 140, 1937.

degree, has been observed in patients with hepatic damage and in those with biliary tract disease.[24b] Recent investigation suggests a possible relationship of these phenomena to a newly found "antithyrotoxic" factor in liver, which presumably is a direct antagonist to the usual action of the thyroid hormone.[25]

The amount of iodine in the blood has for many years merited special consideration. It is an index of thyroid function and of iodine metabolism. It is a rough measure of the release of the thyroid hormone and of its rate of breakdown within the body after it has completed its function. With radioactive tracer methods, this significance has become even more clear. With improving technics in the fractionation of the blood and plasma iodine, means of distinguishing the circulating thyroid hormone from its breakdown products are emerging.[26] Meanwhile studies of the whole blood iodine and particularly of the protein-bound fraction serve along with determinations of basal metabolic rate to differentiate the various thyroid diseases from each other and to distinguish them from normal and nonthyroid clinical states.

Human blood normally maintains a fairly constant level of iodine. Fractionation studies reveal that about

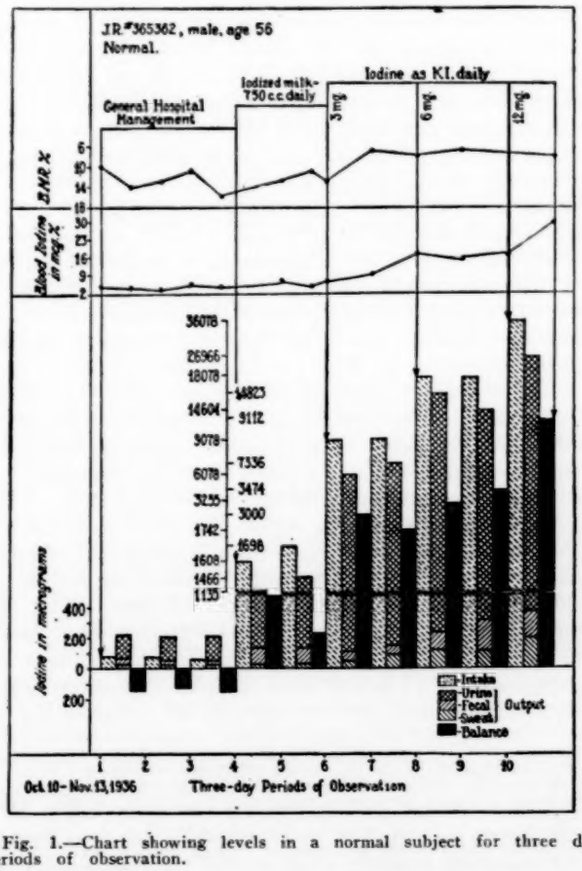


Fig. 1.—Chart showing levels in a normal subject for three day periods of observation.

one fourth of this presumably represents the circulating thyroid hormone.[27] The other three fourths, consequently, would include the iodine of nutrition together with products of the breakdown of the thyroid hormone with its high content of iodine.

Various values, ranging from 3 to 20 micrograms per hundred cubic centimeters, have been ascribed by different investigators to the normal iodine level in whole blood.[28] These vary with the method of iodine

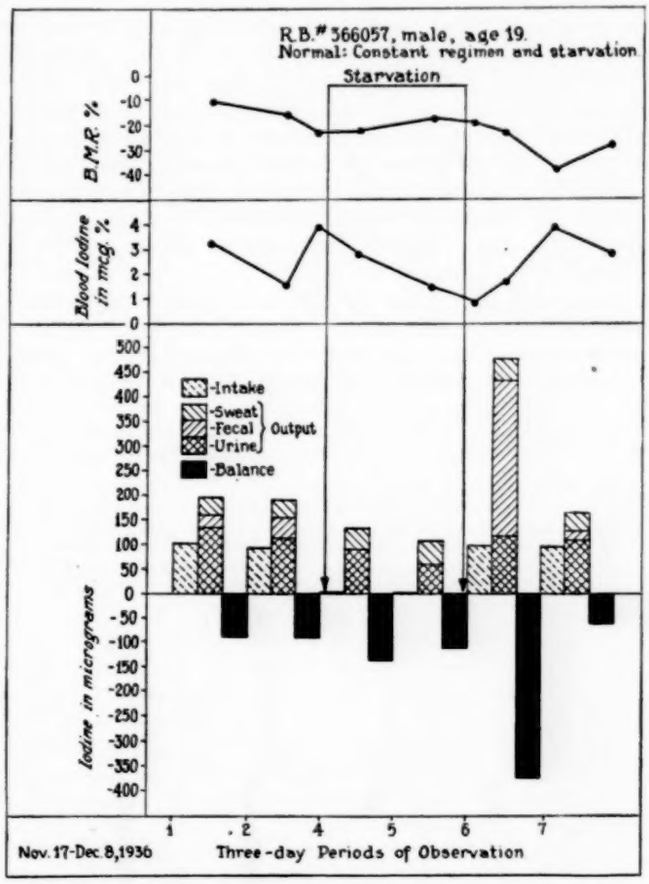


Fig. 2.—Chart showing levels in a normal subject during a constant regimen and starvation in three day periods of observation.

determination and the geographic area, as well as with certain physiologic factors. The blood iodine is significantly increased in pregnancy, in parturition and in toxic nodular and exophthalmic goiter (fig. 3), as well as in certain nonthyroid diseases.[29] Increased blood iodine levels observed in toxic nodular and exophthalmic goiter may be due, in part, to iodine medication, for the administration of iodine in all forms increases the circulating iodine in whole blood (fig. 1).[30]

In hypothyroidism, the iodine in whole blood is often within normal limits.[29b] Nevertheless, the acetone-insoluble fraction, which presumably contains the circulating thyroid hormone, has an average value of about one-half normal.[27a] In nontoxic nodular goiter, this fraction may show an increase over normal [26] when the whole blood iodine does not.[29b]

The iodine concentration in the blood varies; however, it maintains a more constant level than the iodine

25. Betheil, J. J.; Wiebelhaus, V. D., and Lardy, H. A.: A Nutritional Factor Which Alleviates the Toxicity of Ingested Thyroid Substance, J. Nutrition **34**: 431, 1947.

26. Curtis, G. M., and Swenson, R. E.: The Significance of the Protein-bound Blood Iodine in Patients with Hyperthyroidism, Ann. Surg., **128**: 443 1948.

27. (*a*) Davison, R. A.; Zollinger, R. W., and Curtis, G. M.: The Fractionation of the Blood Iodine, J. Lab. & Clin. Med. **27**: 643,1942. (*b*) Curtis and Swenson.[26]

28. Davis, C. B.; Curtis, G. M., and Cole, V. V.: The Normal Iodine Content of Human Blood, J. Lab. & Clin. Med. **19**: 818, 1934.

29. (*a*) Curtis, G. M.; Cole, V. V., and Phillips, F. J.: Blood Iodine in Thyroid Disease, West. J. Surg. **42**: 435, 1934. (*b*) Curtis, G. M., and Fertman, M. B.: An Analysis of the Blood Iodine in Thyroid Disease, Arch. Surg. **50**: 207 (April) 1945; (*c*) The Blood Iodine in Nonthyroid Disease, ibid. **54**: 541 (May) 1947.

30. (*a*) Orr and Leitch.[25] (*b*) Elmer.[25] (*c*) Salter, W. T.: Endocrine Function of Iodine, Cambridge, Mass., Harvard University Press, 1940. (*d*) Curtis, G. M.: Iodine Metabolism in Toxic Goiter, J. Med. **15**: 148, 1934.

in the thyroid.[15] The blood iodine does not always increase or decrease along with the basal metabolic rate.[31] The latter is less exclusively controlled by the thyroid gland than the circulating iodine and is, in fact, the resultant of a number of different metabolic processes. However, there is a significant correlation between the blood iodine and the basal metabolic rate in thyroid disease, noted particularly in those goitrous conditions associated with hyperthyroidism.[31b] as well as in nontoxic nodular goiter.[32]

Thyroidectomy, in human beings or in experimental animals, exerts an important effect on the blood iodine. Immediately following total thyroidectomy there is a transient increase in the blood iodine, which persists for about thirty-six hours. Following total thyroidectomy the blood iodine decreases to about one-third normal.[33]

The urinary iodine is another measure of iodine metabolism. Under maintained basal conditions, together with a monotonous diet low in iodine, the normal adult excretes a surprisingly constant amount of iodine in the

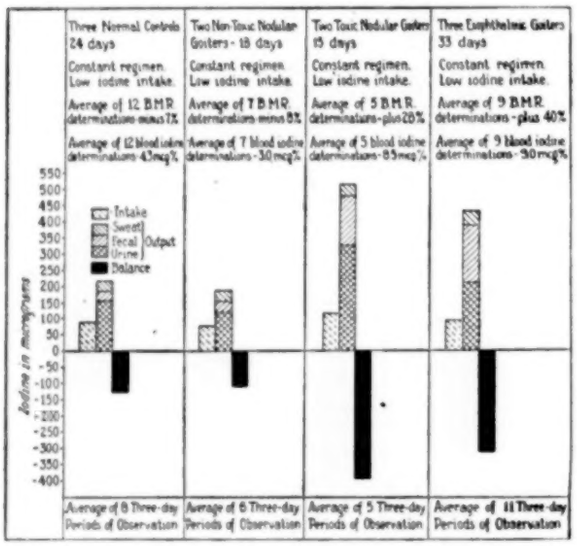
Three Normal Controls
24 days
Constant regimen.
Low iodine intake.
Average of 12 BMR determinations minus 7%
Average of 12 blood iodine determinations 4.3 mcg%
Two Non-Toxic Nodular Goiters - 18 days
Constant regimen.
Low iodine intake.
Average of 7 BMR determinations minus 8%
Average of 7 blood iodine determinations - 3.0 mcg%
Two Toxic Nodular Goiters
15 days
Constant regimen.
Low iodine intake.
Average of 5 BMR determinations - plus 28%
Average of 5 blood iodine determinations - 8.5 mcg%
Three Exophthalmic Goiters
33 days
Constant regimen.
Low iodine intake.
Average of 9 BMR determinations - plus 40%
Average of 9 blood iodine determinations - 9.0 mcg%
Iodine in micrograms
Intake
Sweat
Fecal
Urine
Output
Balance
Average of 8 Three-day Periods of Observation
Average of 6 Three-day Periods of Observation
Average of 5 Three-day Periods of Observation
Average of 11 Three-day Periods of Observation

Fig. 3.—Chart showing levels seen in three day periods of observation for normal subjects and patients with various types of goitrous conditions.

urine[34] (figs. 1 and 2). There is, however, geographic variation. The urinary iodine is higher in sea coastal regions than inland regions.[15] It is higher in the nongoitrogenous than in goitrogenous areas, as illustrated by the contrasting range in iodine excretion of 72 to 343 micrograms a day observed in five nongoitrogenous regions and of 27 to 64 micrograms a day in five goitrogenous districts. The average twenty-four hour urinary iodine excretion by normal adults in Central Ohio, a region of moderate endemic goiter, is 51 micrograms.[35]

Several factors tend to increase the amount of iodine lost in the urine. These include hyperthyroidism (fig. 3),[36] menstruation,[37] pregnancy,[38] surgical treatment[39] and the administration of iodine in nearly all forms (fig. 1).[40] On the other hand, fasting decreases the urinary excretion of iodine (fig. 2).[40b] The decrease is less when the fasting is preceded by an iodine-rich diet.[40c]

Iodine is also present in other body fluids. It has been demonstrated in the lymph, in cerebrospinal fluid, in perspiration (fig. 3), in chyle, in ascitic fluid, in pleural exudates and in milk. In milk it plays the important role of supplying the needed iodine to the growing infant. This iodine is lost at the expense of the mother's iodine stores[5b] and should be replaced, to maintain the health both of the child and of its mother. If iodine feeding is essential under normal conditions of stress and strain, then it is twice as important to the woman who bears a developing fetus or to the lactating mammal. The loss of iodine in milk results in depletion of the mother's iodine reserve with an ensuing negative iodine balance.[40b] This loss should be compensated for by a sufficiently large iodine reserve, previously built up, or by an increased iodine intake.[41] As iodine is administered to the mother, a greater proportion of this substance will be secreted in the milk.[42]

### IODINE AND THE PREVENTION OF GOITER

Fortunate was the empiricism which led the ancients to use burnt sponge or seaweed in the treatment of goiter. Iodine was unknown. It was not until 1811 that iodine was accidentally discovered by Courtois as a by-product resulting from the use of seaweed ash in preparing war materials for Napoleon. Within a few years Sir Humphrey Davy had isolated iodine from sponges, seaweed and other forms of marine life. Then followed a fruitful century of clinical investigation, extending from Straub of Berne to Plummer of Rochester, and of fundamental experimental researches, dating from Boussingault of Paris through Chatin, Baumann, Kendall, Marine, von Fellenberg and others to Harington of London.

Today iodine prophylaxis against goiter is widely recognized, while iodized salt is used throughout the entire United States. The extensive and increasing popularity of the use of iodized salt started from the original experiments conducted in Akron, Ohio.

Marine and Kimball's significant studies on the prevention of goiter were made on a large group of school girls.[43] About one half voluntarily received 200 mg. of sodium iodide daily for a period of two weeks each spring and fall. Among almost 4,500 girls who showed no evidence of goiter at the time the experiment was instituted, in 21.5 per cent of those without iodine suppiements, and, on the other hand, in only 0.2 per

31. (*a*) Curtis and Fertman.[30b,c] (*b*) Curtis, G. M., and Fertman, M. B.: The Relation of the Basal Metabolic Rate to the Blood Iodine in Thyroid Disease, Ann. Surg. **122:** 963, 1945.

32. Curtis and Swenson.[26] Curtis and Fertman.[31b]

33. Curtis, G. M.; Barron, L. E., and Phillips, F. J.: The Blood Iodine After Total Thyroidectomy in Man, J. Lab. & Clin. Med. **20:** 813, 1935.

34. Curtis, G. M.; Puppel, I. D.; Cole, V. V., and Matthews, N. L.: The Normal Urinary Iodine of Man, J. Lab. & Clin. Med. **22:** 1014, 1937.

35. (*a*) Curtis, Puppel, Cole and Matthews.[34] (*b*) Curtis, G. M., and Puppel, I. D.: Urinary Iodine in Thyroid Disease, West. J. Surg. **45:** 417, 1937.

36. Curtis, G. M., and Puppel, I. D.: Increased Urinary Excretion of Iodine in Hyperthyroidism, Arch. Int. Med. **60:** 498 (Sept.) 1937.

37. Cole, V. V., and Curtis, G. M.: Cyclic Variations in Urinary Excretion of Iodine in Women, Proc. Soc. Exper. Biol. & Med. **31:** 29, 1933.

38. Enright, L.; Cole, V. V., and Hitchcock, F. A.: Basal Metabolism and Iodine Excretion During Pregnancy, Am. J. Physiol. **113:** 221, 1935.

39. Curtis and Puppel.[35b] James, A. G.: The Postoperative Loss of Iodine in the Urine, Thesis, Columbus, Ohio, Ohio State University, Department of Surgical Research, 1937.

40. (*a*) Footnote 35. (*b*) Curtis, G. M., and Puppel, I. D.: The Iodine Metabolism in Thyroid Disease, Tr. Third Internat. Goiter Conference, Washington, D. C., 1938, p. 367; The Iodine Metabolism in Exophthalmic Goiter, Ann. Surg. **108:** 574, 1938.

41. Elmer.[15] Marine, D.: Studies on the Etiology of Goiter, Including Graves' Disease, Ann. Int. Med. **4:** 423, 1930; The Importance of Relative Iodine Deficiencies in Certain Forms of Goiter, J. Am. Dietet. A. **9:** 1, 1933.

42. (*a*) Meyer.[5b] (*b*) Matthews, N. L.; Curtis, G. M., and Meyer, J. H.: The Effect of Increased Iodine Feeding on the Iodine Content of Cow's Milk, J. Dairy Research **10:** 395, 1939. (*c*) von Fellenberg, T.: Das Vorkommen, der Kreislauf und der Stoffwechsel des Jods, Ergebn. d. Physiol. **25:** 176, 1926.

43. Marine, D., and Kimball, O. P.: Prevention of Goiter in Man, J. A. M. A. **77:** 1068 (Oct. 1) 1921.

cent of those who received iodine, enlarged thyroid glands developed during the two and one-half years of observation.

More than 2,000 of the Akron school girls showed an initial thyroid enlargement. In as many as 65.4 per cent of those receiving iodine, there occurred a reduction in the size of the thyroid gland at the end of one year. Only 13.8 per cent of the untreated girls showed any diminution in the size of their goiters. This same study revealed that goiter is most likely to develop during fetal life, during puberty and during pregnancy.[43]

The character and results of the Ohio demonstration stimulated similar efforts throughout the world, particularly in Switzerland, Austria and Germany. Iodine prophylaxis in Switzerland brought the steady decline of cretinism, so important an economic factor to the Swiss. Until 1922 every other newborn infant in the Canton of Appenzell began life with an enlarged thyroid gland. With the institution of iodized salt, this morbidity among newborn infants became nearly legend. Moreover, as a result of the efforts of the Swiss Goiter Commission, the use of iodized salt in the Canton of Vaud reduced the community's total goiter incidence from 77 to 21 per cent in fifteen years.[44]

The results of the incorporation of iodine in the salt consumed in the state of Michigan were likewise convincing. In 1924 common salt iodized to contain 0.02 per cent of sodium iodide was introduced by the Iodized Salt Committee of the Michigan State Medical Society in cooperation with the State Board of Health. From that year on to 1935 there ensued a 75 to 90 per cent decline in the incidence of goiter in those counties using the iodized salt.[4b] The number of goiter operations in seven large hospitals in Southern Michigan dropped from 1,452 in 1927 to 591 in 1933.[45] There was a 60 per cent decrease in the number of goiter operations performed as compared with the 17 per cent decrease in all operations during the corresponding depression years.

Iodine supplementally administered in the form of iodized salt has repeatedly proved beneficial in the prevention of endemic goiter. Its curative effect, however, depends on the character of the goiter, as well as on the age of the patient at the time iodine therapy is instituted. While iodine administration is of value to patients with colloid goiter,[2a] little beneficial change may be expected in older patients with goiters of long standing in which there are extensive pathologic alterations, such as hemorrhage with resultant cyst formation, calcification, vascular degenerative changes and old nodular formations.[30a, b]

Ordinarily microscopic changes will occur in hyperplastic thyroid glands after the administration of supplemental iodine. Rapid involution of existing hyperplasia may be induced. Moreover, glandular hyperplasia of the residual tissue, even after extirpation of as much as three fourths of the thyroid, can be prevented by the administration of sufficient iodine. It has been observed that a hyperplastic gland cannot revert to the colloid state without the presence of a necessary minimum of iodine.[10]

The efficacy of iodine prophylaxis is greater the earlier it is applied and decreases after puberty.[2a] Consequently it would seem wisest to commence prophylaxis even before the time of conception and to maintain it throughout the pregnancy. It should be continued during childhood and particularly through the menarche. This can be adequately accomplished in iodine-deficient regions where goiter is frequent by the continued use of iodized salt.

Subsequent to the nearly worldwide preventive use of iodine, a general decline in the incidence of goiter occurred, particularly in Switzerland, in Austria, Germany, Northern Italy, the United States, England, New Zealand, in Poland, Rumania and Latvia.[15] A turnabout in the incidence of goiter in those countries ravaged by war may be anticipated, along with other nutritional deficiency diseases now rampant in Europe and in Asia. As iodine deficiency develops, the incidence of endemic goiter will increase.

Despite almost worldwide favorable results with iodine prophylaxis, thus again substantiating the basic theory on which it rests, objections have been repeatedly raised, in the earlier years abroad and more recently in the United States, to the preventive use of supplemental iodine. Principal among these objections has been the conjectured harm which iodine might inflict on persons with overactive thyroid glands. Moreover, there has been concern that a simple nodular enlargement of the thyroid might thus be stimulated so that a "toxic" or hyperfunctioning type of condition developed.

The basis of this fear of "jodbasedow," or iodine-induced hyperthyroidism, arose as early as 1820, when Coindet treated his patients with excessive amounts of iodine.[46] This fear has continued through the years, almost paralleling the subsequent progress and repeated successes of iodine prophylaxis. It has been a natural reaction to the dangers inherent in pioneering a drug the action of which was not fully understood. More recent exponents of the theory behind "jodbasedow" were Theodore Kocher and his successor Fritz de Quervain. In 1904 Kocher reported that hyperthyroidism may develop in patients with nodular forms of goiter treated with iodine. In 1910 he wrote of the untoward effects of iodine in toxic diffuse goiter.[47] In 1933 de Quervain listed 33 cases of "jodbasedow" observed during a period of nine years.[48]

Convincing proof is lacking that iodine-induced hyperthyroidism ordinarily or even commonly results from the administration of increased amounts of iodine to goitrous patients. On the other hand, evidence is extensive that supplemental iodine is almost universally beneficial in the prevention of endemic goiter. Kimball observed that only 4 per cent of patients with "adenomas" had hyperthyroidism after the use of iodized salt, whereas 56 per cent of those with goitrous "adenomas" who used no iodized salt or any other form of iodine medication later manifested evidence of increased thyroid activity.[49]

In current medical practice there is ordinarily little hesitancy in prescribing relatively large amounts of iodide on specific indications: syphilis, hypertension or bronchiectasis, for example, without any special regard to the thyroid and its activity. Demonstrably harmful effects as a result of increased thyroid function are not

44. Eggenberger, H.: Kropf und Kretinismus, in Hirsch, M.: Handbuch der inneren Sekretion, Leipzig, Curt Kabitzsch, 1927, vol. 3, pp. 3 and 4.

45. McClure, R. D.: Thyroid Surgery in Southern Michigan as Affected by the Generalized Use of Iodized Salt, J. Michigan M. Soc. **33**: 58, 1934; The Incidence of Operations for Goiter in Southern Michigan: Effect of Iodized Salt After Twelve Years' General Use, J. A. M. A. **109**: 782 (Sept. 4) 1937.

46. Coindet, J. R.: Decouverte d'un nouveau remede contre le goitre, Ann. de chim. et phys. **15**: 49, 1820.

47. Kocher, T.: Die Therapie des Kropfes, Deutsche Klin. **8**: 1115, 1904; Ueber Jodbasedow, Arch. f. klin. Chir. **96**: 403, 1910.

48. de Quervain, F.: Report of the Second International Goiter Conference, Berne, 1933, pp. 10-12.

49. Kimball, O. P.: The Efficiency and Safety of the Prevention of Goiter, J. A. M. A. **91**: 454 (Aug. 18) 1928; The Prevention of Goiter in Michigan and Ohio, ibid. **108**: 860 (March 13) 1937.

expected and are rarely encountered. At most there ensues, from the administration of iodides, and then only on occasion, the symptoms of iodism, ranging from mild coryza or moderate acne to severe dermatitis accompanied even with a high temperature.[30c]

No ill results should be anticipated from the widespread use of iodides in the minute concentration in which they occur in iodized salts; there have been no reports of iodism induced by the consumption of diets rich in iodine-containing foods in the annals of medicine.[50]

### IODINE IN THE GENERAL HEALTH OF HUMAN BEINGS AND DOMESTIC ANIMALS

Iodine, forming 65 per cent of the thyroid hormone, is a nutritional necessity for the general health of human beings and domestic animals. General health problems ensuing from iodine deficiency are in great part the result of the importance of iodine in maintaining normal thyroid function.

Sufficient iodine is requisite for normal growth. It is well known that thyroid substance plays this role. As early as 1895 it was demonstrated that growth may be induced even in certain cretins by the administration of dried thyroid. Similar results have since been obtained in children of iodine-deficient areas, who have failed to grow normally because of lesser degrees of hypothyroidism.[51] Topper and Cohen recorded that the administration of thyroid to normal children, as well as to children presenting evidence of hypothyroidism, resulted in definite growth acceleration in both groups.[52]

The role of iodine in growth has also been demonstrated. Thus, Swiss statistics show that boys receiving supplemental iodine grew in a year on the average 7 mm. more than untreated boys and put on 200 Gm. more of weight. The mean weight at birth of infants whose mothers were receiving iodized salt was 100 Gm. greater than that of control infants.[52a] Hunziker observed that the average height of Swiss recruits was significantly greater from 1908 to 1912 than during the period from 1884 to 1891. He concluded that supplemental iodine was partly responsible for this increase in stature. Moreover, he found the average height of recruits from sections with a low incidence of goiter exceeded that of recruits from the more goitrogenous areas.[53]

Feeding milk with an increased iodine content to children living in a region of high goiter incidence resulted in more rapid and regular growth and development. Children with debility or those who revealed slow development, failure to gain weight or retarded growth showed subsequent steady improvement.[54] Administration of optimal amounts of iodine to nursing animals accelerated the rate of growth and weight of their young.[55] Direct iodine administration to the young was likewise beneficial.[56]

The favorable effect of iodine on the growth of vertebrates may be direct or indirect. It appears more likely that iodine acts indirectly by supplying the necessary constituent for normal thyroid secretion, thus permitting the gland to exert its usual function.

Besides its importance in growth, iodine also plays a role in human and animal fertility[57] and even in lactation.[58] A preliminary report on the effect of iodine on failing lactation indicates that this condition is due not to a defective thyroid gland but to a deficient intake of iodine. As in similar experiments with animals,[57] all mothers responded with increased output of breast milk.[58b]

Breeding difficulties among animals long existed in varying degrees throughout the goiter areas of the United States, until the prophylactic use of iodine became widespread as a means of combating this problem.[59]

As early as 1907 iodine-containing salts were fed to Michigan sheep in order to prevent the high mortality rate ordinarily occurring among newborn lambs.[59d] In 1916 Montana, faced with a high mortality rate among its live stock, as well as with the development of goiter and underfunctioning thyroids, instituted similar treatment with success.[59e] Since the introduction of iodized salt at the University of Wisconsin farms in 1920, there has not been an instance of goiter among the domestic animals, including sheep, swine, colts and calves.[4a]

Iodine prophylaxis of iodine deficiency disease among domestic animals, or "fetal athyrosis," as it was then designated, has spread to other states and provinces. Minnesota, North and South Dakota, Wyoming, Washington, Idaho, Southern Alberta and British Columbia have similarly used iodine preventively.

### THE HUMAN REQUIREMENT OF IODINE

The supply of iodine necessary to answer the needs of the human body should be sufficient to meet the daily losses by excretion and to maintain within the body such reserves as may be needed in the manufacture and distribution of adequate thyroid hormone. The amount of iodine intake, however, is not always equal to the physiologic needs. This is in contrast with the organism's chlorine requirement, which is more easily met because of the association of this element with the sensation of taste.

The fundamental question thus arises: How much supplemental iodine is necessary in those areas in which goiter is prevalent in order to protect the populace from the effects of iodine deficiency? Thus far, three methods have been developed in attempts to answer this question.

By the geographic method the iodine intake of the inhabitants of goiter-free areas is determined and compared with that of areas of varying degrees of goiter incidence. The difference in the amount of average iodine intake is then regarded as the amount of supplemental iodine required. According to von Fellenberg's estimate the annual iodine intake in one goitrous and one practically goiter-free area in Switzerland was

50. Weston, W.: Iodine in Nutrition, Am. J. Pub. Health **21**: 715, 1931.

51. Moore, M. C., and Moseley, H. W.: Iodine and Its Relation to Health, New Orleans M. & S. J. **86**: 449, 1934.

52. Topper, A., and Cohen, P.: Effect of Thyroid Therapy on Children, Am. J. Dis. Child. **35**: 205, 1928.

53. Hunziker, H.: Kropf und Langenwachstum, Schweiz. med. Wchnschr. **50**: 209, 1920.

54. Weston, W.: Specially Produced Milk in the Solution of the Goiter Problem, South. M. J. **27**: 249, 1934.

55. Orr and Leitch.[3a] Maurer, E., and Diez, S.: Ueber Wachstumsbechleunigung an jungen Ratten bei Verfutterung jodangereicherter Kost an das laktierende Muttertier, Biochem. Ztschr. **182**: 291, 1927.

56. Hanzlik, P. J.; Talbot, E. P., and Gibson, E. E.: Continued Administration of Iodine and Other Salts: Comparative Effects on Weight and Growth of Body, Arch. Int. Med. **42**: 579 (Oct.) 1928.

57. Phillips, F. J.; Erf, O., and Curtis, G. M.: The Effects of Prolonged Increased Iodine Feeding, Ohio J. Sc. **35**: 286, 1935.

58. (*a*) Phillips, Erf and Curtis.[57] (*b*) Robinson, M.: Hormones and Lactation: Dried Thyroid Gland, Lancet **2**: 385, 1947.

59. (*a*) Smith, G. E.: Iodine Requirement in the Pregnant Sow (Fetal Athyrosis), J. Biol. Chem. **29**: 215, 1917. (*b*) Hart, E. B., and Steenbock, H.: Thyroid Hyperplasia and the Relation of Iodine to the Hairless Pig Malady, ibid. **33**: 313, 1918. (*c*) Kalkus, J. W.: A Study of Goiter and Associated Conditions in Domestic Animals, Bulletin 156, Washington State Experiment Station, July 1920. (*d*) Marine, D.: On the Occurrence and Physiological Nature of Glandular Hyperplasia of the Thyroid (Dog and Sheep) Together with Remarks on Important Clinical (Human) Problems, Bull. Johns Hopkins Hosp. **18**: 359, 1907. (*e*) Welch, H.: Hairlessness and Goiter in Newborn Domestic Animals, Bulletin 119, Montana Experiment Station, September 1917.

4.7 and 11.4 mg., respectively. Calculating from this, the iodine requirement would be less than 20 micrograms daily, a figure now regarded as extraordinarily low.[42c] Calculated on determinations of the average daily urinary loss of iodine (figs. 1 and 2) which is an unusually accurate barometer of the iodine intake of a given area, the daily iodine requirement would lie somewhere between 100 and 200 micrograms.[34]

The principle of thyroxine formation and decay was originally outlined by Plummer and Boothby [60] and subsequently developed by Thompson.[61] Plummer and Boothby observed that the daily rate of thyroxine decay ranged between 200 and 400 micrograms. Thus, a daily supply of thyroxine in this quantity maintained a normal basal metabolic rate in a totally myxedematous patient. Thompson and his group concluded that from 300 to 400 micrograms of thyroxine was necessary to maintain a normal basal metabolic rate in myxedematous patients at bed rest. On the basis of these results the amount of thyroxine supplied daily to the circulation by the thyroid gland, in order to maintain normal metabolic activity, is equivalent to from 130 to 260 micrograms of iodine. The uncertain factor here, however, is that iodine-containing end products of thyroxine decay may be retained and eventually reutilized by the thyroid gland in the further synthesis of thyroid hormone.

Studies of total iodine balance constitute the third principle which has been employed (figs. 1, 2 and 3). The iodine balance represents the daily amount of iodine lost or retained by the body, as ascertained by the difference between the amount of iodine intake and excretion. Pioneer determinations of iodine balance were accomplished by von Fellenberg, who reported low values and consequently a low daily requirement.[42c] The balance studies of Scheffer made in Pecs, Hungary, revealed that 54 micrograms of daily iodine intake was sufficient to maintain the iodine balance in a normal person.[62]

Ohio State University studies were made on normal persons maintained at bed rest on a monotonous diet low in iodine content, under controlled hospital conditions (figs. 1, 2 and 3). In these circumstances the basal human adult iodine requirement was found to range from 44 to 75 micrograms daily and to average 67 micrograms, or approximately 1 microgram per kilogram of body weight.[63] This average daily requirement is comparable to that determined by Scheffer. However, it should be emphasized that it applies to adults maintained under controlled basal conditions. Moreover, to arrive at an optimal iodine requirement, it is necessary to take into account individual activity as well as the varied stress and strain of existence.

After consideration of the difference in iodine intake between goitrogenous and nongoitrogenous regions and the amount of iodine estimated as necessary to maintain normal metabolic activity, 2 micrograms daily per kilogram of body weight, together with the daily basal requirement of 1 microgram, can be reasonably justified as an amount sufficient to account for basal needs, those of ordinary activities and also some for reserve. The optimal daily requirement would thus be somewhere near 200 micrograms for an adult of 70 Kg., a value compatible with Elmer's deduction from various investigations that the human optimal requirement ranges between 100 and 200 micrograms daily.[15] The pregnant woman should receive additional iodine.[41a] A sufficient amount will be supplied by the use of iodized salt.[39]

Various methods of supplying supplemental iodine to the inhabitants of iodine-deficient areas have been advanced. These include the use of foods known to be rich in iodine, iodinization of water supplies, administration of iodine at regular intervals in the form of solutions or tablets, the general use of iodized salt and the consumption of iodized milk.

The use of iodized salt has thus far proved the most widely adopted method. The nearly universal employment of common salt for seasoning and cooking, as well as the ready preparation and low cost of iodized salt, makes this the popular method. The use of milk with an increased iodine content has also been suggested as suitable (fig. 1),[8b] especially for children who ordinarily consume large quantities. Effective iodine prophylaxis should conform to local conditions, since no single method will reach all those persons who need iodine.

The iodized salt originally recommended in 1924 by the Michigan State Medical Society in conjunction with the State Board of Health, and subsequently employed in Michigan with such outstanding results, originally contained 0.02 per cent of sodium iodide. However, after careful consideration, the Goiter Study Committee of the American Public Health Association reached the conclusion that the addition of 0.01 per cent of potassium iodide plus a stabilizer should be sufficient.[4] The importance of a stabilizer was emphasized in view of previous experience that iodine may be lost from iodized salt and thus impart a yellowness and a halogen odor on liberation of elemental iodine.

It has been estimated that the average adult ingests about 6.2 Gm. of salt daily. Calculated on this basis, the approximate amount of potassium iodide intake would be 620 micrograms, which is equivalent to about 474 micrograms of iodine. This is more than twice the amount we have suggested as optimal and would amply provide a person with a sufficient reserve.

## SUMMARY AND CONCLUSION

The universal prevention of endemic goiter and its sequelae will depend not only on the preparation and consumption of adequately iodized salt but also on the persistent education of all peoples to the necessity of its continued use. This is slowly but surely being accomplished. We may even look forward with sound hope to the eventual control of endemic goiter.

It cannot be too frequently repeated that iodine plays an indispensable role in the human organism and an indisputable role in medicine. Its prophylactic usage to insure the well-being of man and his essential domestic animals deserves continued emphasis. Thus, the element iodine is to the normal functioning thyroid gland as water to cultivated ground. Deprivation of this necessary substance, even to a slight degree, produces changes in the entire organism, harmful to the individual and significant to a people. A sufficient amount of iodine intake is a biologic necessity.

60. Plummer, H. S., and Boothby, W. M.: Specific Dynamic Action of Thyroxin, Am. J. Physiol. **55:** 295, 1921. Plummer, H. S.: The Interrelationship of Function of the Thyroid Gland and of Its Active Agent, Thyroxin, in the Tissues of the Body, J. A. M. A. **77:** 243 (July 23) 1921.

61. Thompson, W. O.; McLellan, L. L.; Thompson, P. K., and Dickie, L. F. N.: The Rates of Utilization of Thyroxine and of Desiccated Thyroid in Man: The Relation Between the Iodine in Desiccated Thyroid and Thyroxin, J. Clin. Investigation **12:** 235, 1933. Thompson, W. O.; Thompson, P. K.; Taylor, S. G.; Nadler, S. B., and Dickie, L. F. N.: The Pharmacology of the Thyroid in Man, J. A. M. A. **104:** 972 (March 23) 1935.

62. Scheffer, L.: Ueber die Jodbilanz normaler Menschen, Biochem. Ztschr. **259:** 11, 1933.

63. Flickinger, F. M.: The Iodine Requirement of Man, Thesis, Columbus, Ohio, Ohio State University, Department of Surgical Research, 1941.

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SATURDAY, JANUARY 1, 1949

## THE MEDICAL SUPPORT FOR COMPULSORY SICKNESS INSURANCE

In the editorial published in The Journal last week on the assessment and public opinion, attention was called to the fact that the medical profession as a whole gives but little support to Mr. Oscar R. Ewing's propaganda in behalf of compulsory sickness insurance. The same pressure groups that have been apparent in the past are again visible on the public horizon. Chief among them, because of its financial support, is the so-called Committee for the Nation's Health, Inc., headed by Dr. Channing Frothingham, motivated and controlled by Mr. Michael M. Davis, Ph.D., who likes to be called "doctor," and largely supported through Mr. and Mrs. A. D. Lasker and some of their friends. When the House of Delegates of the American Medical Association unanimously voted the $25 assessment to promote voluntary health insurance and to educate the American people regarding the ideals of American medicine and the dangers of a politically controlled compulsory sickness insurance system, Dr. Channing Frothingham of Boston voluntarily gave an interview to the press alleging that the doctors of the grass roots would never support the action of the House of Delegates. Enough response has already occurred to indicate that Dr. Channing Frothingham was without any exact knowledge on which to base that statement. Indeed, he is so far removed from the activities of the American Medical Association that his judgment could have but little basis. Dr. Frothingham must be pardoned, however, since he has apparently some difficulty in learning facts of even greater importance. Here is the testimony which he gave in hearings before the Senate Committee on Education and Labor:

Senator Donnell: Doctor, this is not any aspersion on you, but I want to get at just who those that really organized this Committee for the Nation's Health are.

Who did that?

Dr. Frothingham: I do not know. That is a tough one.

Senator Donnell: Who was the first man you ever heard about it from? That is fine grammar I used here. But, from whom did you first hear about the organization of this committee?

Dr. Frothingham: Darned if I know. I would have to look that up in my files.

Senator Donnell: Was it not Dr. Michael M. Davis?

Dr. Frothingham: It might well have been. I can imagine of no better organizer.

Senator Donnell: I expect you are right. He is a pretty good organizer.

The Chairman [Senator James E. Murray]: Doctor, I might ask you a few questions there.

Is it not a fact that you and other physicians like you have been interested in improving medical care in this country and have been coming to Washington here and attending previous hearings that we have had on this problem, and have been contacting and talking to people like myself, who have been interested in this problem for some time?

I have known you myself personally for several years, prior to the organization of this committee, and I have known of your interest in this problem.

Dr. Frothingham: Yes.

The Chairman: You have discussed it with me many times, and I have seen you at meetings where the matter is being discussed. The organization of this committee is an evolution.

Dr. Frothingham: That is right.

The Chairman: Which has been taking place in this country for a period of years.

Dr. Frothingham: That is perfectly true. It must be at least three years that we have been mulling over this subject.

The Chairman: Yes.

Senator Donnell: And Doctor, your mulling culminated on the 23d of February of this year in the incorporation of this committee, is that right?

Dr. Frothingham: The mulling brought out this particular group in favor of it. There are other groups working on it.

Senator Donnell: Is Dr. John P. Peters also in this Committee for the Nation's Health?

Dr. Frothingham: I have got to look at that, too.

Yes; he is only a couple of lines lower down than Butler.

Senator Donnell: Doctor, I will not ask you in detail on this, but without reference to your leaflet or your files, do you know anybody that is on this committee except yourself and Mr. Michael Davis?

Dr. Frothingham: Yes.

Senator Donnell: Who?

Dr. Frothingham: Well, now, let me think.

I went to a meeting, or a couple of meetings in New York. There was a man by the name of Rothchild and a lady by the name of—she had a wonderful suite of rooms. I cannot remember what her name was.

The Chairman: Where did this meeting take place, Doctor?

Dr. Frothingham: Once in a house and once in the suite of rooms. We went to two meetings. I really cannot remember her name.

The Chairman: You may use the pamphlet and refresh your memory if you desire. That is a practice in the legal profession.

SENATOR DONNELL: That is all right. I would really like for him to tell us if he has any memory about anybody there except Mr. Rothchild and this lady.

DR. FROTHINGHAM: Yes. Dr. Davis, the nonmedical Dr. Davis.

SENATOR DONNELL: Dr. Michael Davis, also?

DR. FROTHINGHAM: Dr. Michael M. Davis.

SENATOR DONNELL: This is an organization meeting?

DR. FROTHINGHAM: No; this is the executive committee, this is after the movement was over and the child was born.

SENATOR DONNELL: All right.

DR. FROTHINGHAM: I cannot remember her name to save my soul. It is lucky I am getting too old to practice, is it not?

And then a lady by the name of Norman. She was not the one that owned the villa.

SENATOR DONNELL: You cannot remember the name of the lady who had the villa?

DR. FROTHINGHAM: I will tell you, Dr. Davis can tell you that.

SENATOR DONNELL: Dr. Michael Davis?

DR. FROTHINGHAM: He is my memory man.

SENATOR DONNELL: All right.

Additional support for compulsory sickness insurance comes from a committee known as the Committee of Physicians, which began a good many years ago with some four hundred names and which now has apparently dwindled to thirty-five. Several of the thirty-five are also officers of the Committee for the Nation's Health, Inc.; a few are names notable in medicine for contributions to medical advancement. A good many are full time salaried teachers. Under the leadership of Dr. John Peters of Yale University School of Medicine, who seems to represent 95 per cent of the working force of this group, they discuss with a vast amount of wordage and with a great deal of seesaw motion every step in the consideration of the problem. Apparently they have a mailing list of some thousands of names, but the source of their financial support is not apparent.

Third in the opposition is the Physicians Forum headed by Dr. Ernst Boas of New York. This agency may muster as many as 3,000 members, almost wholly concentrated in Philadelphia, New York and Washington. Recently the president of the New York County Medical Society, Dr. William B. Rawls, accused Dr. Boas of membership in a great many leftist organizations. An attempt is now being made to cause Dr. Rawls to retract his statement, and the matter is before the comitia minora of the New York County Medical Society.

This apparently represents the organized medical opposition to the policies of the American Medical Association. Certainly the opposition is pitiful in its proportions compared to the vast support of the American Medical Association's policies given by an exceedingly preponderant majority of the latter's more than 135,000 members.

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## THE WORLD HEALTH ASSEMBLY

The first World Health Assembly met in Geneva from June 24 to July 24, 1948. Already many of its activities have been noted in the news columns of THE JOURNAL. The organization is complex, with special committees devoted to a variety of interests. At present the chief concerns are malaria, tuberculosis, venereal disease and maternal and child health. Programs have been established for these four fields which will be begun in 1949 and developed over succeeding years. The Assembly estimates that more than one fifth of all deaths throughout the world from all diseases arise from environmental conditions controllable by sanitary engineering. An expert committee is to be established for this field also. As soon as measures for the improvement of environmental hygiene can be taken by governmental action without recourse to such technics as education, instruction or individual treatment, the World Health Organization looks for prompt results in improving sanitary conditions throughout the world.

Nutrition is the environmental factor which is agreed to have the greatest bearing on health. Obviously, therefore, the World Health Organization will soon have established a special committee on this subject to be concerned particularly with endemic goiter and pellagra.

Geneva is the permanent headquarters of the World Health Organization. Arrangements have been made for suitable relationships with UNESCO, United Nations and similar groups. The budget for 1949 is $5,000,000; of this amount $1,000,000 has been assigned to the six subjects mentioned on the priority list. Another sum of $700,000 has been set aside for fellowships, medical literature and teaching material, and additional appropriations have been made for international epidemiologic studies, editorial and reference services, public health administrations and health statistics.

A World Health Day is to be held in the future each year on July 22, the date on which the constitution of the World Health Organization was signed by sixty-one states. The next Health Assembly is to be held in Europe. The representation from the United States is considerable and includes, among others, Dr. James R. Miller, who is a trustee of the American Medical Association. The active representative is Dr. H. van Zile Hyde.

# Current Comment

## PROPORTION OF PHYSICIANS TO POPULATION

In a broadcast over the Mutual Chain entitled "Meet the Press" early in December, Mr. Oscar R. Ewing, Administrator of the Federal Security Agency, was asked the simple question, "Do you know of any country that has more doctors in proportion to its population than the United States?" To this Mr. Ewing replied, "I don't. . . . I just don't know the answer one way or the other. Whether there are or aren't. I can't tell you." For the information of Mr. Ewing and of others who may have doubts that the United States has more doctors in proportion to population than any other country in the world, THE JOURNAL presents a recent table based on a survey conducted in 1948 by the World Medical Association. In this table the number of doctors per 100,000 population is listed, and in the right hand column the number of people per doctor. It should be obvious that except for Palestine (Jewish), where there are great numbers of refugee physicians from Central Europe, the United States is well ahead of the rest of the world in proportion of physicians to population.

*Total Population, Physicians and Physicians per 100,000 Population and Population per Physician in a Representative Group of Countries* *

| Country | Population | Doctors | Doctors per 100,000 Population | Population per Doctor |
|---|---|---|---|---|
| United States | 141,228,673 | 197,005 | 140 | 710 |
| Great Britain | 48,788,000 | 55,771 | 114 | 870 |
| Iceland | 132,000 | 149 | 113 | 890 |
| Denmark | 4,044,725 | 4,250 | 105 | 950 |
| Canada | 11,489,713 | 11,901 | 104 | 970 |
| New Zealand | 1,750,000 | 1,800 | 103 | 970 |
| Australia | 7,500,000 | 7,137 | 95 | 1,100 |
| Switzerland | 4,000,000 | 3,806 | 95 | 1,100 |
| Sweden | 6,700,000 | 6,360 | 95 | 1,100 |
| Spain | 27,000,000 | 25,142 | 93 | 1,100 |
| Norway | 3,126,000 | 2,900 | 93 | 1,100 |
| Netherlands | 9,000,000 | 8,000 | 89 | 1,100 |
| Luxemburg | 281,572 | 234 | 83 | 1,200 |
| Czechoslovakia | 12,000,000 | 9,300 | 78 | 1,300 |
| France | 40,000,000 | 30,000 | 75 | 1,300 |
| Eire | 3,000,000 | 2,000 | 67 | 1,500 |
| Bulgaria | 7,022,206 | 4,563 | 65 | 1,500 |
| Finland | 3,865,000 | 1,737 | 45 | 2,200 |
| Union South Africa | 11,391,949 | 4,800 | 42 | 2,400 |
| Egypt | 17,000,000 | 4,000 | 24 | 4,200 |
| Palestine (Arab) | 1,300,000 | 291 | 22 | 4,500 |
| China | 450,000,000 | 20,000 | 4 | 25,000 |
| Palestine (Jewish)† | 625,000 | 2,386 | 382 | 260 |

* Source: Draft Report on the Medical Professions in 23 Countries, New York, World Medical Association, 1948, table 1. The only other current figure available is 16,939 physicians in Brazil in 1946, which has a population of about 45,000,000, giving 36 physicians per 100,000 population (J. A. M. A. 138: 527 [Oct. 16] 1948). This is greatly out of line with the estimate for 1933, which placed Brazil's ratio as equal to Sweden's.

† "The high rate of 3,818 [per million] for the Jewish section of Palestine is probably attributable to special temporary circumstances."

## THE AGES OF PHYSICIANS IN 1940 AND IN 1948

Elsewhere in this issue is a tabulation prepared by the Bureau of Medical Economic Research of the American Medical Association of the ages of all physicians in the United States, including those who are not in active practice. Contrary to the claims made by some advocates of compulsory sickness insurance, the average age of physicians has declined slightly since 1940. The percentage who are under 50 years of age has increased from 57.5 in 1940 to 60.2 in 1948. The percentage at age 70 and over has also increased. The decline in the median age from 45.8 years to 44.4 reflects the results of the speed-up program of medical education during World War II. This article is the second in a series. The first article appeared in THE JOURNAL of Aug. 21, 1948 and revealed that the number of physicians has increased 14 per cent since 1940, while the total United States population has increased only 12 per cent. Subsequent tabulations will be reported in THE JOURNAL by the Bureau of Medical Economic Research from time to time as its new punch card system nears completion.

## INSTITUTE OF INTER-AMERICAN AFFAIRS

Recent reports of the Institute of Inter-American Affairs indicate that a realistic inventory and appraisal of programs which the Institute has been conducting in the countries of the Western Hemisphere since 1941 is now under way. The primary purpose of reappraisal at this time is the establishment of definite recommendations toward provisions for the future of the entire program. Since 1941, first under the auspices of the Coordinator of Inter-American Affairs and subsequently under the direct control of the State Department, the Institute has been engaged in three-pronged actively cooperative programs in health, education and agriculture with some twenty of the Western Hemisphere republics. The Institute program has received less than deserved publicity and recognition in the United States, primarily because of overshadowing news events connected with the war and with subsequent postwar activities in the European and Asiatic areas. However, the work of the Division of Health and Sanitation of the Institute alone has been the greatest operating international public health effort both in scope and area covered ever undertaken by a single public health agency. The health projects, although they vary to some extent in all countries, are directed toward public health education, improvement of basic sanitary facilities, hospital construction and operation, special disease campaigns and training of personnel. The selective approach of the Institute to problems of agriculture, health and education is based principally on the belief that hunger, disease and ignorance are the outstanding allies of totalitarianism in the present world situation. The program of the Institute represents the spirit of good neighborliness characteristic of international relations among the countries of the Western Hemisphere for many years past. Such a program of proved effectiveness in friendly countries of the Western Hemisphere deserves continued national support.

# ORGANIZATION SECTION

## Washington Letter

*(From a Special Correspondent)*

Dec. 27, 1948.

### Radical Changes Advocated by Hoover Commission Unit

The Commission on Organization of the Executive Branch of the Government—better known as the Hoover Commission—will make several controversial recommendations to Congress in January if it indorses the views of its "task force" committee that studied the National Military Establishment. These recommendations affect not only the Army, Navy and Air Force medical departments but bear directly on Veterans Administration and U. S. Public Health Service as well. In addition, their adoption would exercise marked influence on nongovernmental medical care and hospitalization, with particular reference to those proposals for a system of "federal health insurance," amendment of the Selective Service Act to legalize drafting of A. S. T. P. and V-12 graduates who saw little or no active service in the military medical corps and unification of federal hospitalization.

Following are some of the recommendations of the Eberstadt committee, which surveyed the National Security Organization for the Hoover Commission, together with observations culled from its detailed report:

Establish a single federal hospital system, which would administer all government hospitals—Army, Navy and Veterans Administration included—located within the continental limits.

"The proposed Federal hospital system could well develop one of the strongest graduate training programs in American medicine, with the highest professional standards of medical service. At the same time it could guarantee a reservoir of skilled personnel who would be attracted to government service through appreciation of the rewards in such a service and the possibilities of a distinguished career in medicine."

Study the feasibility of reducing the patient load of military hospitals by curtailment of services to dependents, the point being noted that 42 per cent of all beds in naval hospitals are occupied by nonservice patients.

"Withdrawal of these privileges within the services might raise serious morale problems. The logical solution to this problem may be the same as in civilian life and industry, namely, provision of hospital and medical insurance to cover the needs of such dependents. It would, obviously, be necessary to increase monetary allowances to provide for such an insurance plan, but such provision would probably be more economical in the long run. Such insurance coverage could be used either in Federal or civilian institutions. Medical service for dependents in outlying posts or overseas stations would, of course, continue."

Let the armed forces strive for greater conservation of their medical man power and enhancement of its efficiency.

"In the committee's opinion, service estimates of their medical and dental needs are excessive and are much higher in proportion to numbers of personnel than in civilian life. The utilization of doctors in administrative rather than in medical positions, maldistribution of medical personnel, wasteful medical practices and the diversion of service medical efforts to care for a great patient load of service dependents, veterans and various Federal employees contributes to the apparent service shortage. There is, however, a great national shortage of doctors—particularly of specialists—and even the correction of service medical deficiencies will not solve this problem."

The Eberstadt committee urges establishment of a separate medical department to serve the U. S. Air Force, criticizes the recent Army order (Circular No. 342, Nov. 1, 1948) which subordinates the Surgeon General to the Director of Logistics, suggests that the medical division of National Security Resources Board coordinate the allocation of affiliated reserve medical units for duty in event of emergency and praises the record of the Office of Naval Research for its work in initiating and supervising medical and other types of scientific studies.

"It should be emphasized," says the report, "that the proposal for the establishment of a federal hospital system does not involve 'socialized medicine'; such a consideration is entirely beyond the committee's purview."

Through the services of Drs. Howard A. Rusk and Richard D. Meiling, the Eberstadt committee had close liaison with the Voorhees committee, another Hoover Commission "task force" whose job consisted of surveying the federal government's activities in the health, medical and hospital fields as a whole. Findings of the latter group were scheduled to be made public in late December. The Eberstadt report indicated that both committees had found agreement on establishment of a unified federal hospital system and the wisdom of studying institution of "a system of federal health insurance for service personnel and dependents."

### Forrestal's Medical Advisors to Meet in January

Although a definite date for the new group's first meeting had not yet been fixed a week before Christmas, indications were that the Armed Forces Medical Advisory Committee would be assembled in mid-January. Appointment of such a group was one of the recommendations of the Eberstadt committee. It proposed, however, that the chairman be a physician. Secretary of Defense Forrestal's designee is a layman, Charles Proctor Cooper, president of the board of trustees of Presbyterian Hospital (New York) and formerly vice president of American Telephone & Telegraph Company. Three of the advisory committee members—Drs. Michael DeBakey, Paul R. Hawley and Edward D. Churchill—served on the Hoover Commission's "task force" that investigated federal activities in medical care and hospitalization. Another, Dr. Raymond B. Allen, president of the University of Washington, was a member of the Eberstadt committee, while Drs. Rusk and Meiling were liaison officers. The other civilians on the advisory group are Drs. Maurice C. Pincoffs, Paul Titus and Walter H. Scherer, the last named being a former president of the American Dental Association.

### Dr. Topping Promoted to Assistant Surgeon General

Dr. Leonard A. Scheele, Surgeon General of the U. S. Public Health Service, has announced promotion of Dr. Norman H. Topping to Assistant Surgeon General. The rank is equivalent to that of brigadier general. Dr. Topping will continue in his present assignment as associate director of National Institutes of Health, research arm of the Public Health Service. Born in Missouri in 1908, Dr. Topping received his undergraduate and medical education at University of Southern California and was commissioned in the Public Health Service in 1936.

## Coming Medical Meetings

Annual Congress on Industrial Health, Chicago, Drake Hotel, Jan. 18-19. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 7-8. Dr. Donald G. Anderson, 535 N. Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Chicago, Palmer House, Feb. 4-5. Dr. F. S. Crockett, 535 N. Dearborn St., Chicago 10, Chairman.

American Society for Surgery of the Hand, Chicago, Jan. 21-22. Dr. Joseph H. Boyes, 1401 S. Hope St., Los Angeles 15, Secretary.

International Post-Graduate Medical Assembly of Southwest Texas, San Antonio, Jan. 25-27. Dr. John J. Hinchey, P. O. Box 2445, San Antonio, Secretary.

Southeastern Allergy Association, Durham, N. C., Washington-Duke Hotel, Jan. 22-23. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia, S. C., Secretary.

Southeastern Surgical Congress, Biloxi, Miss., Jan. 24-27. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta 3, Ga., Secretary.

Western Section American Urological Association, Coronado, Calif., Hotel del Coronado, Jan. 17-19. Dr. Adolph A. Kutzmann, 1930 Wilshire Blvd., Los Angeles 5, Secretary.

# GOVERNMENT SERVICES

## ARMY

### TRAINING COURSES AVAILABLE IN CIVILIAN INSTITUTIONS

Training courses ranging in length from five months to a year to be given in specified civilian institutions during the fiscal year 1950 are now being offered to qualified Regular Army personnel, the Surgeon General has announced, as a development of the Medical Department's Career Guidance Plan evolved two years ago. The subjects include most of the medical and allied science fields at leading universities, colleges, hospitals and foundations. The Surgeon General's Office intends to train personnel whose records and aptitudes show them best qualified to draw the maximum benefits from advanced study. The program, tentatively established in twenty-five civilian institutions, has a twofold aim: to insure advancement in their respective specialties to each of the officers selected and to integrate the best of civilian medicine with military medicine. Information for applicants is set forth in SGO circular 134 dated Nov. 16, 1948. Applications for training are to be forwarded to the Surgeon General's Office prior to Feb. 1, 1949.

### NEW COMMANDANT OF MEDICAL CENTER

The Surgeon General announced December 9 the assignment of Brigadier General Paul H. Streit to command the Army Medical Center in Washington, D. C., succeeding Major General George C. Beach Jr., who died Nov. 18, 1948. General Streit was recently in command of Brooke General Hospital at Fort Sam Houston, Texas. He was graduated by the University of Texas Medical School and interned at John Sealy Hospital in Galveston, Texas, then joined the Regular Army Medical Corps and went overseas with the 87th Division in 1917. He did postgraduate nose and throat work at the University of Bordeaux and in 1919 joined the American Typhus Relief Expedition with headquarters in Warsaw, Poland. Among other assignments, he has been chief of the eye, ear, nose and throat service at Jefferson Barracks, Mo.; at Sternberg General Hospital in Manila; at Fort Leavenworth (Kansas) General Hospital; at the Army-Navy General Hospital, Hot Springs, Ark., and at the Letterman General Hospital, San Francisco. During the recent war he was chief surgeon of the Central Pacific Base Command and commandant of the Dibble General Hospital, the Army's center at Menlo Park, Calif., for treatment of blindness and for plastic surgery.

### MONTHLY MEDICAL MEETING

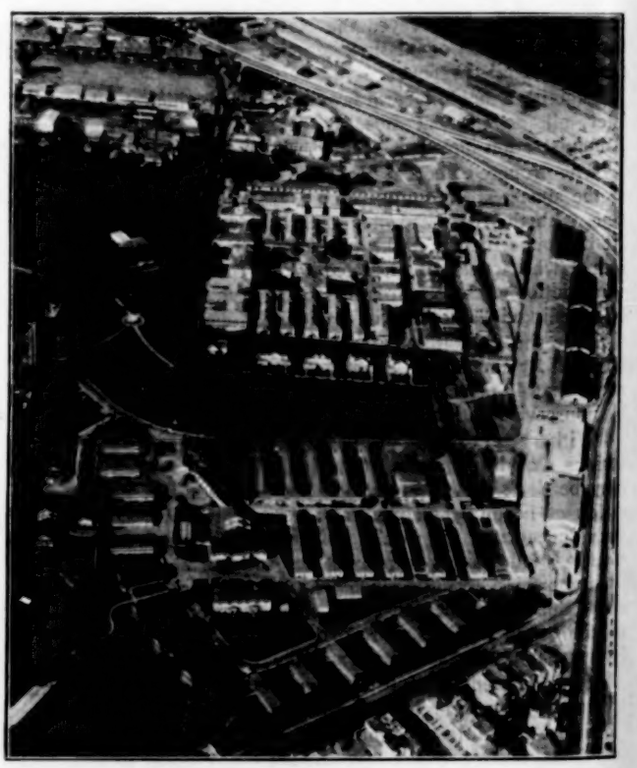
Dr. Owen H. Wangensteen, chief, department of surgery, University of Minnesota, Minneapolis, will address the Surgeon General's monthly medical meeting at Walter Reed Hospital January 24 on "The Etiology and Surgical Management of Peptic Ulcers." Major Edwin J. Pulaski, Surgical Research Laboratory, Brooke Army Medical Center, Fort Sam Houston, Texas, will speak on "The Control of Peritoneal Infection in Gastro-Intestinal Tract Surgery."

### INSTITUTE OF PATHOLOGY

The following doctors were at the Army Institute of Pathology, Washington, D. C., on the dates indicated, to act as consultants to the staff: Dr. Henry M. Goldman, Boston, November 4-5, and Dr. Herman Becks, George Williams Hooper Foundation, University of California, November 10-14.

### LETTERMAN HOSPITAL CELEBRATES FIFTIETH ANNIVERSARY

Letterman General Hospital, Presidio of San Francisco, celebrated its fiftieth anniversary on Nov. 23, 1948. The Surgeon General of the Army made the chief address. Brigadier General Frank L. Cole, hospital commander, directed the anniversary program. This nospital was designated a general hospital by the Secretary of War on Dec. 1, 1898, and thirteen years later was named in honor of Major Jonathan Letterman, a Civil War surgeon who devoted the last eight years of his life following retirement from the Army to community service in the Presidio of San Francisco. Major Letterman was the son of an eminent Pennsylvania physician. He received his M.D. degree from Jefferson Medical College in 1849 and joined the Army as an assistant surgeon in that year. He served in at least three Indian campaigns. On July 4, 1862, he reported



Latest Air View of Letterman General Hospital.

for duty as Medical Director of the Army of the Potomac. The outbreak of hostilities between the states found the Surgeon General almost totally unprepared. When Letterman took over as medical director, he found neither plans, personnel nor equipment for collecting the wounded from the battlefields, for transporting them to the rear or for caring for them in hospitals. Letterman immediately set up an efficient evacuation operation, organized an ambulance corps, devised an effective supply plan and inaugurated a field hospital system which was the forerunner of the current station hospital. These were all innovations. While similar proposals had been made before at various times, all were either ignored or discarded. Letterman's entire program, which received its first trial at Fredericksburg in 1862, was later enacted into law with a few minor changes. Thus was established the basic model of the current field organization of the Army Medical Department.

# NAVY

## SPECIAL WEAPONS PROJECT

Regular and Reserve officers of the Navy are invited to attend an indoctrination course on the medical aspects of atomic explosion at the Sternberg Auditorium, Army Medical Center, Washington, D. C., Jan. 24 to Feb. 1, 1949. Any regular or reserve officer desiring to attend this course should apply by air mail letter to the Bureau of Medicine and Surgery not later than January 10. Accepted candidates will be requested to attend this course at their own expense under TAD authorization orders with government air transportation if available.

## FIRST ACTIVE DUTY

The following lieutenants (jg) in the medical reserve corps have received orders to their first active duty as interns at the Naval hospitals indicated: Konstantin H. Geocaris of Chicago, to Oakland, Calif.; James A. Hardie of Columbus, Ohio, to Oakland, Calif.; Harold P. Hargreaves of Salt Lake City, to St. Albans, L. I., N. Y.; Raymond J. Krause of Columbus, Ohio, to San Diego, Calif., and William C. Love of Columbus, Ohio, to Long Beach, Calif.

## POSTGRADUATE INSTRUCTION

The following medical officers have been nominated to the courses in postgraduate instruction indicated: Comdr. John C. Dunn, Brooklyn, to a fellowship in children's orthopedics at the James W. Riley Memorial Hospital, Indianapolis; Lieut. George C. Beattie, Bowling Green, Ohio, to a fellowship in children's orthopedics at the Children's Hospital, Boston, and Lieut. (jg) Lyle H. Prenzler, Bloomington, Ill., to a residency in psychiatry at St. Elizabeth's Hospital, Washington, D. C.

## INSTRUCTION IN CIVILIAN INSTITUTIONS

The following reserve medical officers have been ordered to their first active duty and will receive postgraduate instruction under the Navy's Medical Training Program in civilian institutions: Lieutenants (jg) Robert P. Dobbie Jr., Buffalo, N. Y., to a residency in general surgery at University Hospital, Ann Arbor, Mich.; Paul D. Doolan, Hamden, Conn., to a residency in internal medicine at Boston City Hospital, Boston; James L. Keating, Falls Church, Va., to a residency in general surgery at Georgetown University Hospital, Washington, D. C., and John W. Troy, Washington, D. C., to a residency in general surgery at Georgetown University Hospital, Washington, D. C.

## PERSONALS

Comdr. T. A. Harris, M.C., chief of the Division of Psychiatry of the Bureau of Medicine and Surgery, has been appointed a member of the American Board of Psychiatry and Neurology.

Lieut. (jg) Frank D. Fuller has transferred from active reserve status to the Regular Navy Medical Corps.

Lieutenants (jg) William C. Curtis of Milwaukee and Navon M. Olson of Lake Mills, Iowa, reserve medical officers, have been ordered to their first active duty.

## GUEST LECTURER AT MEDICAL CENTER

Dr. Arthur W. Allen of Boston addressed the meeting of the Naval medical officers at Bethesda, Md., Dec. 17, 1948, on "Gastric and Duodenal Ulcers." This was the fourth lecture of the monthly series by guest speakers sponsored by the Medical Center.

# VETERANS ADMINISTRATION

## NEW METHOD OF STAFFING A HOSPITAL

The Veterans Administration announces that a new method of staffing will be in effect when the Veterans Administration hospital at Grand Junction, Colo., opens in January 1949. The new 150 bed general medical and surgical hospital, located about half way between Salt Lake City and Denver, will not have any residents. Instead, it will be staffed with men who have completed their formal residency training and are prepared to put in two years of practice in their specialty under supervision of certified specialists. This training is necessary as part of the requisite for becoming certified specialists. The Veterans Administration said that the program—under the supervision of Dr. Richard Young and Dr. Ward Darley, deans of the medical schools of Utah and Colorado universities, respectively—will result in a continually rotated staff of high caliber.

## INTENSIVE TREATMENT OF MENTAL PATIENTS

During the last year an intensive treatment program, officially identified as the Reintegrative Research Program, has been in effect at the Veterans Hospital at Northport, Long Island, in an attempt to rehabilitate patients with the more serious types of mental disease. This program, the Veterans Administration announced Dec. 10, 1948, is beginning to have results. Two hundred World War II veterans whose mental illnesses had failed to respond to previous methods of treatment were selected to take part in the program. These patients now are on a completely supervised schedule from 7 a.m. to 9 p.m. five days a week. The basic aim is to increase the patients' interest, starting with some simple form of athletics, to relieve the aggressive tendencies and tensions which many of them display. The group is alternated between occupational therapy, corrective therapy, athletics and recreation. Miniature bowling and table tennis, for example, are suggested to encourage the spirit of competition. Individual and group psychotherapy is available. As individual patients show interest in the activities, they are advanced to more difficult tasks. While progress is extremely slow, it indicates a potential discharge rate of nearly 40 per cent for a class of patients previously considered probably lifetime hospital patients. In the group mentioned, 16 patients have returned home and 14 others will soon leave on trial visits. Forty-five others are considered good prospects for eventual release; 2 of the 16 discharged patients are now employed full time.

The program at Northport has been under the direction of Dr. William L. Harris, with Dr. Louis F. Verdel, hospital manager, as coordinator. Since its inauguration at Northport in December 1947, the program has been adopted by several other Veterans Administration neuropsychiatric hospitals.

## RESIDENCIES IN NEUROLOGY

An additional residency training program for physicians desiring to train in neurology under the Veterans Administration has been organized by the Philadelphia Deans Committee. This residency covers a period of three years or less, depending on the previous experience of an applicant, and is designed to prepare residents for certification in neurology by the American Board of Psychiatry and Neurology. The program includes rotation through the Veterans Administration Hospital, Coatesville, Pa., Veterans Administration Regional Office, Philadelphia, and the Philadelphia General Hospital. Applications should be sent to the Manager, Veterans Administration Hospital, Coatesville, Pa.

## NEW HOSPITAL AT HOUSTON, TEXAS

Bids for the construction of a thousand bed veterans neuropsychiatric hospital at Houston, Texas, have been awarded to the low bidders for $17,788,000 for general construction and $529,000 for staff quarters; also to another corporation $470,380 for installation of elevators and $95,100 to still another corporation for the construction of a water tank.

### THE NUMBER OF VETERANS

The Veterans Administration announced that as of October 31 the total number of living veterans of all wars was 18,819,000, of whom 14,997,000 were veterans of World War II. The total number of veterans in hospitals on that date was 105,762, of whom 68,992 were veterans with non-service-connected disabilities. There were in addition 15,026 veterans beneficiaries in Veterans Administration homes. Two new Veterans Administration hospitals had been completed through the end of the month of October, and eighty-nine veteran hospitals were in various stages of the construction program.

### PERSONAL

Dr. A. Ray Dawson has resigned as assistant medical director for physical medicine rehabilitation in the Veterans Administration and will return to Richmond, Va., as chief of physical medicine at the McGuire Veterans Administration Hospital. His successor will be Dr. A. B. C. Knudson.

Dr. Joseph M. Farrell has been appointed to the full time staff of the Veterans Administration hospital, Huntington, W. Va. Dr. Farrell was graduated from Long Island College of Medicine in 1942 and served in the Army Medical Corps during the recent war.

## PUBLIC HEALTH SERVICE

### NATIONAL ADVISORY HEART COUNCIL

At a recent meeting in Bethesda, Md., this council resolved that about $30,000,000 would be necessary for adequate execution of the plan to assist hospitals and medical schools with the necessary laboratory facilities for research on heart disease on a five year basis. Applications were received from fifty-one hospitals and medical schools, but further study of them was decided on before final recommendation to the Surgeon General. The council also recommended, subject to its further review, applications totaling about $3,000,000 for promising research investigations. Applications were considered from thirty-seven medical schools for grants to improve and expand cardiovascular teaching and approval was tentatively recommended of applications totaling about $1,350,000; also considered were applications for grants for control projects (special pilot studies) preliminary to the development of statewide and community heart disease control programs throughout the country. The council recommended the approval of applications for about $200,000 for these special studies, for which funds are presently available. The next meeting of the National Advisory Heart Council, which is composed of leaders in medical science and public affairs with Dr. Paul D. White of Boston as director, will be held in New Orleans February 27 to March 1, 1949.

### REGULAR CORPS EXAMINATION FOR NURSE OFFICERS

A competitive examination for appointment of nurse officers in the regular corps of the U. S. Public Health Service will be held on March 17, 1949, at various points in the United States. Appointments are permanent in nature and provide opportunities for a lifetime career in the fields of clinical and public health nursing at Marine hospitals and in a variety of public health programs. Appointments will be made in the grades of junior assistant, assistant and senior assistant nurse officer. Annual entrance pay is from $2,955.50 to $4,489, as determined by the grade of appointment and existence of dependents. All applicants must be registered nurses with a baccalaureate degree from an approved school of nursing. Past nursing experience in the Army, Navy or Public Health Service may serve, in certain instances, in lieu of academic degree. Additional information may be obtained by writing to the Surgeon General, United States Public Health Service, Washington 25, D. C., Attention: Division of Commissioned Officers.

### MENTAL HEALTH COUNCIL

The meeting of The National Advisory Mental Health Council in Washington, D. C., December 12-13, marked the completion of two and one-half years of the expanded national mental health program authorized by the National Mental Health Act of 1946. The council recommended twelve new mental health research grants which totaled $121,735 and undergraduate training grants in psychiatry in forty-two schools of medicine, approximating $1,500,000 over a three year period. The applications now go to the Surgeon General of the Public Health Service for official approval and payments will be made as funds become available. As the entire appropriation for research and training for the current fiscal year—a total of $2,000,000—has been previously obligated, payments on the grants approved at this meeting will not be made before the 1950 fiscal year. The National Advisory Mental Health Council is composed of authorities in mental health appointed to advise the Public Health Service in its administration of the Mental Health Act.

### HOSPITAL SURVEY AND CONSTRUCTION ACT

The Hospital Facilities Division of the Public Health Service announced that as of Nov. 26, 1948, five hundred and sixty-four initial project applications for federal grants under the Hospital Survey and Construction Act had been approved by the Surgeon General. The Division estimated that over one hundred projects are actually in the construction stage. The total estimated cost of the five hundred and sixty-four projects is over $341,000,000. The federal share of this is estimated at over $103,000,000.

### PERSONAL

Dr. Maurice A. Roe has been appointed medical director for the Public Health Service in Region 8 of the Federal Security Agency with headquarters in Dallas, Texas, succeeding Dr. Knox E. Miller, who has been assigned to the City Health Department in Milwaukee.

Dr. Warfield Garson, formerly visiting associate research specialist at the New Jersey Agricultural Experiment Station, Rutgers University, New Brunswick, has been placed in charge of antibiotic research at the V. D. Research Laboratory, U. S. Marine Hospital, Staten Island, N. Y.

## MISCELLANEOUS

### DR. HUMPHREYS HEADS RADIOMETRY RESEARCH

Curtis J. Humphreys, Ph.D., has been named chief of the Radiometry Section of the Atomic and Molecular Physics Division, National Bureau of Standards, where he will be concerned with standards of radiant energy, analysis of infra-red and ultraviolet absorption and emission spectrums, line emission spectrums and flame spectrums in the infra-red, and the utilization of photoconducting detectors in high resolution spectroscopy.

Dr. Humphreys, who is well known for his research in spectroscopy, has been associated with the Bureau since 1928, with the exception of 1934 and 1935, when he was on the staffs of the Massachusetts Institute of Technology and the United States Coast and Geodetic Survey. From 1922 to 1927 he was a member of the faculty of Western Reserve University and from 1921 to 1922 was a research assistant at the University of Michigan. Between 1919 and 1921 he was an instructor in physics at the University of Kentucky. He received his Ph.D. from the University of Michigan in 1928.

# Medical News

**(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)**

## ARIZONA

**Reorganize State Department of Health.**—The new plan for organization adopted by the State Board of Health for the Arizona State Department of Health establishes the following bureaus in the department: administration, preventive medical services, local health services and sanitation. Dr. Elmore P. Kalbaugh, recently assigned to Arizona by the U. S. Public Health Service, has assumed the position of director of the state health department's Division of Tuberculosis Control. He is a graduate of the Medical College of Virginia at Richmond.

## CALIFORNIA

**Third Institute on Alcohol Studies.**—A third Institute on Alcohol Studies is tentatively set for the first week in February to be held on the Los Angeles campus of the University of California under the auspices of the Department of Institutes of University Extension. Representatives of social, medical, education, religious and legal groups will be asked to present their views in large general sessions, and opportunity for critical discussion will be provided in small sessions. Persons interested in attending may obtain information from the Department of Institutes, University of California, Los Angeles 24.

## CONNECTICUT

**Yale Retirements.**—The retirement of three members of the faculty of Yale University School of Medicine has been announced: Dr. Arthur H. Morse, professor of obstetrics and gynecology; Dr. George M. Smith, research associate in anatomy with the rank of professor, and Miss Alice M. Hunt, assistant professor of anesthesia.

**Dr. Fisher Honored.**—The new laboratory of the Middlesex Hospital in Middletown is to be named in honor of Dr. Jessie W. Fisher "to mark her long and faithful service to the institution as pathologist and bacteriologist." After graduation from the Woman's Medical College, Philadelphia, in 1893, Dr. Fisher went to Middletown as a pathologist in the Connecticut State Hospital, and formed her connection with the Middlesex Hospital in 1916.

## DISTRICT OF COLUMBIA

**Seminar on Tumors of the Skin.**—The Washington Society of Pathologists of Washington, D. C., announces a joint Baltimore-Washington Seminar on Tumors of the Skin to be held in the auditorium of the Medical Society, District of Columbia, February 5, from 10:30 a. m. to 4:30 p. m. Col. James E. Ash, Washington, and Drs. Arthur A. Allen, Paterson, N. J., and Elson B. Helwig, St. Louis, will serve as principal discussants. Pathologists, dermatologists and other physicians in Washington and surrounding areas are cordially invited. Study material for the seminar will be issued from the agency of the American Registry of Pathology on or about December 27 for one month's study prior to the day of the seminar. Washington and Baltimore members of the respective pathology societies are requested to return the diagnostic list on the study material to Dr. Ruell A. Sloan, Curator of the Army Medical Museum, no later than January 23.

## GEORGIA

**Obstetric Seminar.**—An Obstetric Seminar for general practitioners was held at the University of Georgia School of Medicine, Augusta, Dec. 6-10, 1948, under the auspices of the departments of public health of Georgia and South Carolina and under the direction of Drs. Guy V. Rice, Albany, and Hilla Sheriff, Columbia, S. C. About fifty attended.

**Personal.**—Dr. Jack C. Norris, Atlanta, has been named chairman of the cancer commission of the Medical Association of Georgia, succeeding the late Dr. James L. Campbell, Atlanta. The commission coordinates the cancer control program of the state medical association, the American Cancer Society and the Cancer Control Division of the Georgia Department of Public Health.

## ILLINOIS

**Personal.**—Dr. James R. Hughes of Oak Park has been appointed chief of medical service at the Veterans Hospital in North Little Rock, Ark., and also has accepted an apointment as associate professor of medicine at the University of Arkansas School of Medicine, Little Rock. Dr. Hughes formerly was an associate to an attending physician of Cook County Hospital.

**Dr. Sayago to Address Joint Meeting.**—Dr. Gumersindo Sayago of Cordoba, Argentina, will be the after dinner speaker at a joint meeting of the Chicago Tuberculosis Society and the Illinois Chapter of the American College of Chest Physicians at the Congress Hotel, Chicago, January 7 at 6:30 p. m. Dr. Sayago has just returned from a medical mission to the Philippine Islands, which was sponsored by the World Health Organization. Reservations should be made immediately with Dr. Edwin R. Levine, secretary of the Chicago Tuberculosis Society, 500 North Dearborn Street, Chicago 10. A scientific program will be presented after the meeting.

**Television Enlisted for Health Education.**—New technics in health education made possible by television are being worked out in a series of radio programs recently begun by WGN-TV, Chicago, with the cooperation of the Educational Committee of the Illinois State Medical Society. The first program featured a 9 year old boy, a diabetic, demonstrating how he gives himself a daily injection of insulin. A mother of two daughters, a victim of diabetes, also appeared on the program, which was built around an interview with Dr. Henry T. Ricketts, associate professor of medicine, University of Chicago School of Medicine, and Dr. Chester Coggeshall, associate in medicine at Northwestern University Medical School. Both doctors emphasized the need for careful training of the patient so that he understands the nature of the disease and the importance of balancing food, insulin and energy output. A second program in the series dealing with birthmarks is being planned.

### Chicago

**Society News.**—The North Side Branch of the Chicago Medical Society, meeting January 6 at 8 p. m. at the Drake Hotel, will hear Dr. Robert W. Keeton, Chicago, speak on "Types of Uremia and Their Treatment" and Dr. Ovid O. Meyer, Madison, Wis., on "Present Status of Treatment of the Anemias."

**Dr. Phemister to Give the Fenger Lecture.**—Dr. Dallas B. Phemister, chairman emeritus, department of surgery, University of Chicago School of Medicine, will deliver the thirteenth Christian Fenger Lecture of the Institute of Medicine of Chicago and the Chicago Pathological Society January 10 at the Palmer House, on "Circulatory Disturbances of the Skeletal System."

**Library Memorial Fund.**—Northwestern University has received a fund of $10,000 in memory of the wife of Ronald J. Chinnock, Chicago. Income from the gift will be used for benefit of the Archibald Church Library of the medical school. Purchase and maintenance of books on the subject of cancer, degenerative diseases and allied medical fields were recommended for special attention in the administration of the fund.

**Illinois University Appointments.**—Five appointments to the faculty of the University of Illinois College of Medicine have been announced. Dr. Lewis Haas, recently appointed assistant professor of radiology, served as head of the x-ray department of the Koranyi City Hospital in Budapest, Hungary, from 1945 to 1948 and held the rank of associate professor of roentgenology at the medical school of the State University in Budapest from 1946 to 1948. Nathan O. Kaplan, Ph.D., a research associate at Massachusetts General Hospital, Boston, has been appointed professor of the department of biological chemistry effective January 1. Dr. Kaplan was associated with the Manhattan project during the war. He is a graduate of the University of California at Los Angeles and received his Ph.D. degree in biochemistry from the University of California, Berkeley. Dr. Arthur A. Rodriquez has been appointed professor of physical medicine. A graduate of the University of Illinois, Dr. Rodriquez previously served as director of the fever therapy department of the Chicago Intensive Treatment Center. He was a Baruch fellow in physical medicine. Dr. Audrey Wilson has rejoined the faculty as an assistant professor of radiology following a year of residence in Phoenix, Ariz. A graduate of Northwestern University Medical School, she originally joined the faculty in October 1945. Dr. Max. C. Igloe, new head of Chicago Health Department's district health services division, has been appointed associate professor in the department of preventive medicine and public health on a part time basis at the University of Illinois College of Medicine. The new District Center at 802 South Paulina Street will be available to students of medical schools in Chicago for training in public health. Before joining the Chicago Health Department, Dr. Igloe served as chief of the outpatient section of the Veterans Administration Branch in Chicago.

## LOUISIANA

**Testimonial to Dr. Maes.**—In celebration of his seventieth birthday a testimonal dinner was given to Dr. Urban Maes by patients and friends in New Orleans October 29. Speakers included members of the faculty of the Louisiana State University School of Medicine and representatives of staffs and boards of trustees of Touro Infirmary and Charity Hospital. Dr. Maes retired as professor and head of the department of surgery and was appointed professor emeritus in 1947. He recently completed fifty years of practice at Touro Infirmary.

**Research on Diarrheal Diseases.**—A large scale research project on diarrheal diseases of infancy has been instituted at the Tulane University of Louisiana School of Medicine and Charity Hospital under the joint auspices of the departments of preventive medicine and pediatrics and the U. S. Public Health Service. Studies will be carried out on the bacterial and viral flora of the intestines of normal infants and alterations which occur with the onset of diarrhea. Methods by which the disease is spread from one infant to another and new forms of treatment will also be investigated. A team of physicians and nurses will be prepared to investigate such epidemics wherever they may develop throughout the South. Dr. James Watt, of the faculty and surgeon, U. S. Public Health Service, is director of the study. Dr. Myron E. Wegman, Dr. Robert L. Simmons and other members of the department of pediatrics and preventive medicine will be closely associated with several phases of the problem.

## MASSACHUSETTS

**Society Meetings.**—The Norfolk District Medical Society, meeting at the Boston Medical Library January 25, will hear three speakers discuss geriatrics, Drs. Theodore G. Klumpp, New York, and Robert T. Monroe and John Homans of Boston. At their meeting February 23 there will be a symposium on thromboembolic disease with Drs. William C. Moloney and E. Everett O'Neil, both of Boston, and James M. Evans, New York, taking part.

**Massachusetts General to Construct Research Building.**—Massachusetts General Hospital, Boston, announces plans for the construction of a $2,750,000 research building to permit consolidation and expansion of its research program. Construction is expected to start immediately after completion of plans April 1. Research will be conducted in cooperation with Harvard Medical School, Boston, and the Massachusetts Institute of Technology, Cambridge. The new building will contain psychiatry, pathology, cardiovascular and cancer laboratories, clinical laboratories for arthritis and endocrinology and research laboratories for biochemistry, enzyme chemistry, routine chemistry, cellular biology, experimental pathology and physics.

## MISSISSIPPI

**Personal.**—Dr. Felix J. Underwood, Jackson, state health officer, is the recipient of a plaque as an "award for meritorious service as campaigning chairman for the state division of the American Cancer Society in its 1948 campaign."

**More than Fifty Years of Practice.**—In a service at Baptist Church in Raymond, Dr. Frank G. Goodwin, Hinds County physician for fifty-nine years, was presented a certificate by the Mississippi State Medical Society and other tokens of appreciation from the church for his service to the community. Dr. Goodwin is a graduate of the Medical Department of Tulane University of Louisiana, 1889. He has practiced in the Raymond community for forty years.

**Student Scholarship Loans.**—Sixteen young men have been conditionally approved for medical education loans by the State Medical Education Board. Fifteen of this midyear group are veterans of World War II. One will attend Emory University School of Medicine, Atlanta; the others, the University of Mississippi School of Medicine, University. These men are a part of the 164 who have been approved by the State Medical Education Board for these loans. Recipients of such loans agree to become family doctors in approved rural sections for two to five years, all students being obligated for the minimum period of two years regardless of the amount borrowed.

## MISSOURI

**Personal.**—Dr. Clyde W. Geiter, Kansas City, has been appointed vice president of George A. Breon & Company, manufacturers and distributors of pharmaceutic preparations, Kansas City. Dr. Geiter was appointed medical director early this year. He is a graduate of Creighton University School of Medicine, Omaha, 1941.

**Dr. Foster to Direct Pharmacology Department.**—Dr. Robert H. K. Foster has been appointed professor and director of the department of pharmacology at St. Louis University School of Medicine, replacing the late Dr. John Auer, who died April 30. Dr. Foster received his M.D. degree from the University of Chicago in 1935, and formerly was chief pharmacologist with Hoffman La Roche, Incorporated, Nutley, N. J.

## NEW YORK

**Warning of Thefts of Narcotics.**—Dr. Herman E. Hilleboe, state health commissioner, issued a warning December 8 to hospitals, pharmacists and physicians to take greater care in guarding narcotic drug supplies. There have been more than twenty major thefts of such supplies from state hospitals during the last year in New York City, Buffalo, Troy, Syracuse, Rochester, Schenectady and Jamestown. He suggested prompt installation of suitable storage space, adequate protection of doors and windows leading to stockrooms, keeping working stocks at a minimum and returning working drug stocks to protective storage when drugs are not in active use.

### New York City

**Extend Diagnostic Service to Physicians.**—To make possible extension of the health department's diagnostic services to physicians, a pilot clinic is being established at the Lower West Side Health Center on Ninth Avenue in Manhattan. The clinic is expected to accept each month about 300 new ambulatory indigent patients on referral of physicians. The results of all examinations and laboratory studies and summary of the case with comments will be sent to referring physicians to whom the patient will be instructed to return.

**New Cancer Research Unit at Columbia.**—Columbia has announced plans to construct a $2,000,000 cancer research unit at the Columbia-Presbyterian Medical Center. Three floors of new laboratories will be constructed atop the present Vanderbilt Clinic and will be in continuity with the existing laboratories of the medical school and in close relationship to the wards of Presbyterian Hospital. Work is to begin early in 1949 and is expected to be completed in 1950. The National Advisory Cancer Council will provide $1,000,000.

**Course in Medical Records.**—A course in medical records will be presented at the Columbia-Presbyterian Medical Center February 1 to March 17, 7-8:40 p. m. Tuesdays. The course will deal with the unit medical record and with requirements and problems peculiar to the system. It also aims to acquaint the student with The "Standard Nomenclature of Disease and Standard Nomenclature of Operations." Tuition is $40. Application should be made to the Director of University Admissions, Columbia University, 116th Street and Broadway, New York 27.

**Venereal Disease Control Program.**—The first phase of the venereal disease control program initiated by the Department of Health November 8 has been described as "an unqualified success" by Dr. Harry S. Mustard, Commissioner of Health. The number of persons coming to the city's social hygiene stations for the first time was two and one-half times the normal total, an increase of 10,000 during the month. Requests by doctors and hospital outpatient departments for free penicillin for the treatment of early syphilis, syphilis in pregnancy and gonorrhea rose 400 per cent during the month of the campaign, as compared with October, the first month during which the drugs were made available, "a proof of the cooperation of private physicians." Three million leaflets and 75,000 posters telling of advanced technics of treatment, emphasizing clean living and urging examinations, were distributed. Five county medical societies gave full endorsement to the program.

## PENNSYLVANIA

**Dr. Wolffe Wins Award.**—The Laymen's Honor Award of the Pennsylvania Association for Health, Physical Education and Recreation was conferred recently on Dr. Joseph B. Wolffe, of the Wolffe Clinic in Philadelphia at a December dinner meeting of the association. Dr. Wolffe becomes the fifth winner of the annual award, which is restricted to persons not actively or regularly engaged in physical education or recreational work. Dr. Wolffe and his associates conducted an extensive cardiovascular study of athletes.

### Philadelphia

**University Appointment.**—Dr. Wilbur C. Thomas, assistant professor of pathology at the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C., has been appointed associate professor of pathology at Temple University School of Medicine.

**Dedicate Betatron.**—The betatron laboratory at the University of Pennsylvania was dedicated December 6, and will be used by the university's department of physics in its research program carried on jointly with the Office of Naval Research. Capable of accelerating electrons to 22,000,000 volts, the betatron was installed in a specially constructed laboratory at a cost of more than $200,000.

**Health Survey of Philadelphia.**—A citywide health survey of Philadelphia, conducted by the Health and Welfare Council, is expected to start this month. The survey will be directed by Dr. Carl E. Buck, New York, who has made many other surveys. The work will be carried out under the general supervision of an executive committee appointed by the City Planning Commission, the Philadelphia Department of Public Health and the Health and Welfare Council. Information gathered will be of particular interest to the department of health as a basis for carrying out a program for the decentralization of city health services.

## TENNESSEE

**East Tennessee Heart Association.**—The Knoxville Academy of Medicine initiated the formation of the East Tennessee Heart Association, organized November 17 primarily as a lay group. Its purpose is to promote research in heart disease in conjunction with the American Heart Association.

**Cerebral Palsy Center Opened.**—The Cerebral Palsy Center, Knoxville, established through the cooperation of the Tennessee Society for Crippled Children and Disabled Adults, the Elks, St. Mary's Memorial Hospital and the Cerebral Parents Council of Knoxville, opened in September in St. Mary's Memorial Hospital. The Knoxville Elks provided the fund of $10,000 to establish and maintain the center.

## GENERAL

**Social Hygiene Day.**—The American Social Hygiene Association has set February 2 as National Social Hygiene Day with the theme "Protect the Family . . . Stamp Out VD." The day will be observed in thousands of cities at meetings, rallies, institutes and forums on February 2, and throughout the rest of the month. Program and publicity aid materials may be secured now by writing to the American Social Hygiene Association, 1790 Broadway, New York 19.

**Heart Disease Research Grants.**—To encourage urgently needed research into the heart diseases, the American Heart Association invites application for fellowships and grants in the cardiovascular field. Application blanks are available from the association's medical director, Dr. Charles A. Connor, 1775 Broadway, New York 19. The program of the Heart Association is closely coordinated with that of the National Heart Institute of the U. S. Public Health Service and with the Life Insurance Medical Research Fund.

**Complete Inventory of Nurses.**—At the request of the National Security Resources Board, the American Nurses' Association will direct a complete inventory of all professional registered nurses in the United States and its territories. Final tabulation is expected to be completed by June 1949. The National Security Resources Board is a permanent civilian agency reporting direct to the President of the United States. It is charged with formulating for the President plans and policies concerning industrial and civilian mobilization of the nation's man power in the event of war.

**Research on Alcoholism.**—The Research Council on Problems of Alcohol will award two grants-in-aid of about $2,500 each to the Biochemical Institute of the University of Texas at Austin, Texas, and to the University of Washington School of Medicine, Seattle, for fundamental research on the problems of alcoholism. The Texas award is the second granted within the past year to carry on the basic research of Dr. Roger J. Williams on the possible physiologic causes underlying problem drinking. The Washington award is to facilitate the research of Dr. Walter L. Voegtlin in the determination of possible allergic factors underlying chronic alcoholism.

**Dr. Rusk Receives Award.**—Dr. Howard A. Rusk received a meritorious award of the National Rehabilitation Association for outstanding service in the field of rehabilitation December 7. Dr. Rusk, who was wartime chief of the Army Air Forces' rehabilitation program, is professor and chairman of the department of rehabilitation and physical medicine at New York University College of Medicine, and an associate editor of *The New York Times*. He is also director of the new Institute of Rehabilitation and Physical Medicine of the New York University—Bellevue Medical Center, consultant in rehabilitation to the United Nations and a member of the Advisory Board of the Office of Vocational Rehabilitation.

**The Rising Birth Rate.**—According to the *Statistical Bulletin* of the Metropolitan Life Insurance Compay the birth rate in the United States shows an increase in productivity among women past the prime of reproductive life, a reversal of the downward trend in evidence for many years. At the ages 35 to 39 the birth rate among white women rose more than one third between 1939 and 1946, i. e., from 42 per 100,000 to 57, after having fallen steadily from about 80 per 1,000 in the period immediately following World War I. At the ages 40 to 44 the rate has also shown an upward tendency in recent years. The rate for first births has increased almost continuously since 1933; it reached a wartime peak of 26 per 1,000 in 1942, declined in the next three years and rose to an unprecedented 27 per 1,000 in 1946, when the number of first births was 1,150,000. For both first and second children the birth rates in 1946 were considerably above the levels recorded a generation ago. The average age at which women have their first, second and third child has gone up almost a year since the 1930's. For the years immediately ahead, the outlook is that the birth rate among women having their first child will decrease gradually, paralleling the slow decline of the marriage rate.

**Communicable Disease Report.**—While the seasonal decline in poliomyelitis continues, above normal seasonal incidence persists unusually late in a few states, according to the U. S. Public Health Service. A total of 360 cases was reported for the week ending December 15, as compared with 440 for the previous week, 524 for the next earlier week, 132 in 1947, 241 in 1946 and a five year median of 133 for the respective corresponding weeks. Of the current total, one third (122 cases) were reported in California, 24 cases in North Carolina, 22 in Minnesota and 19 each in Texas and Iowa; this is 57 per cent found in these five states. The total to date is 27,032 as compared with 10,575 in 1947, 24,763 in 1946 and a five year median of 13,443 for the respective corresponding periods. The September death rate for poliomyelitis (based on a 10 per cent sample of death certificates) was 3.5 per 100,000 population, which is above the expectancy based on the trend in the past ten years, and the rate of 1.2 for the first nine months of the year is higher than any rate recorded for a corresponding period in the past decade.

Measles is being reported in epidemic proportions in some areas. The reported incidence increased from 5,345 cases for the preceding week to 6,337 for the week ending December 15, of which 42 per cent occurred in the New England and Middle Atlantic states. The current figure and the total since the average seasonal low week (week ended Sept. 4, 1948), 33,269, are above the figures for all corresponding periods since 1943 (8,161 and 41,442, respectively).

## CORRECTION

**d-Tubocurarine in Wax and Oil.**—In the article by this title in THE JOURNAL, Dec. 11, 1948, page 1087, the word "milligrams" throughout the article should read "standard units." Each cubic centimeter of this preparation contains 27 mg. d-tubocurarine chloride pentahydrate (equivalent to approximately 175 units) and 48 mg. of myricin (wax) suspended in peanut oil. The charts in the article are correct.

# Marriages

RICHARD R. ROYER, Grosse Pointe, Mich., to Miss Carolyn Stewart Wander of Maplewood, N. J., in Orange, N. J., September 11.

MARSHALL WAYNE WOODARD, Asheville, N. C., to Miss Patsy Ruth Jackson of Man, W. Va., September 18.

CHARLES ELROY LLEWELLYN JR., Richmond, Va., to Miss Sara Grace Eldridge of Fort Smith, Ark., September 25.

A. IRVINS C. DE FRIEZ, Boston, to Miss Amey Amory, of Dover, Mass., in Wellesley, Mass., September 18.

KELLY TILSON MCKEE, Bristol, Tenn., to Miss Gladys Harvath at Lynchburg, Va., recently.

W. ROBERT ELGHAMMER, Chicago, to Miss Doris Elizabeth Postlewaite of Palatine, Ill., recently.

DYER CARLISLE JR., Birmingham, Ala., to Miss Fleda Frances Baines of Gordo, September 27.

CHARLES A. HOGBEN, Rochester, Minn., to Miss Ann Stanbery in San Francisco, recently.

# Deaths

**Hugh Smith Cumming** ✦ formerly Surgeon General of the U. S. Public Health Service, died at his home in Washington, D. C., December 20, aged 79. Dr. Cumming was born in Hampton, Va., Aug. 17, 1869. His education was obtained at Symmes Eaton Academy and Baltimore City College. He was graduated from the University of Virginia Department of Medicine, Charlottesville, in 1893 and from the University College of Medicine, Richmond, 1894, in which year he entered the U. S. Public Health Service as assistant surgeon. In 1899 he was promoted to passed assistant surgeon and served as chief quarantine officer in the South Atlantic and San Francisco until 1906, when he became medical officer attached to the U. S. Consulate in Yokahama, Japan. While chief quarantine officer at Hampton Roads in 1911, he was promoted to surgeon, in 1918 to Assistant Surgeon General and in February 1920 to Surgeon General. Subsequently he made a study of the pollution of navigable streams which was followed by an investigation of coastal waters along the Atlantic seaboard. During World War I he was detailed to the Navy as adviser in sanitation and later was sent to Europe in charge of public health service activities relating to sanitation, returning troops and the resumption of trade. He then served as president of the Inter-Allied Sanitary Commission to Poland, from where he was recalled to the United States to assume the position of Surgeon General in 1920. In 1945, on his twenty-fifth anniversary as director of the Pan American Sanitary Bureau, he received the gold medal from the Republic of Guatemala. He was president of the National Board of Medical Examiners from 1934 to 1936, president of the Southern Medical Association, 1930, American Public Health Association, 1931 and in 1924 the Association of Military Surgeons of the United States, from which in 1943 he received the Gorgas Medal. He was the recipient in 1936 of the Hartley Gold Medal of the National Academy of Sciences and in 1944 the William Freeman Snow Medal from the American Social Hygiene Association. He had represented the United States as head of the American delegation at the Pan American Sanitary conferences at Lima, Peru, Havana, Cuba, and Buenos Aires, Argentina; in 1919 member of the Cannes Conferences and of the Advisory Committee of the League of Red Cross Societies, served as president of the fifth Pan American Conference of National Directors of Health and was a member of the American Delegation to the Immigration Conference in Rome. He was head of the American delegation at a meeting of the Office International d'Hygiene Publique, which proposed the new International Sanitary Treaty, and a member of the international meeting which proposed the Pan American Sanitary Code. He was a member of the Permanent Committee of the Office International d'Hygiene Publique, and a member of the health committee, League of Nations, since its inception and vice president for many years. Dr. Cumming received the decoration of Commander of the Legion of Honor of France and the decoration Commander with Star, Polonia Restituta (Poland), and had been tendered the Order Al Merito of Ecuador, the Order of Carlos Finley of Cuba and El Sol of Peru. He received decorations from Chile, Colombia, Dominican Republic, Haiti and Mexico. Dr. Cumming's administration of the Public Health Service is credited with completion of the federal quarantine system, inauguration of preimmigration examinations at American consulates, establishment of the national leprosarium at Carville, La., and national narcotic farms, the construction of eight marine hospitals and fostering scientific research.

The President nominated Dr. Cumming for a fourth term as Surgeon General, effective March 10, 1932. He retired from active duty on Jan. 31, 1936, having served as an officer of the U. S. Public Health Service for forty-two years, and as Surgeon General for sixteen years. In addition to duties directly connected with the Public Health Service, Dr. Cumming was a member of the Board of Hospitalization formed by the President for the purpose of making recommendations concerning the expenditure of funds for the purchase and erection of hospitals used by the Veterans Bureau. He was a member of the board of visitors of St. Elizabeth's, Garfield Memorial and Columbia hospitals, chairman of the Section on Public Health Organizations of the White House Conference on Child Health Protection, honorary chairman of the Section on Public Health and Medicine, Eighth American Scientific Congress and an honorary fellow of the American College of Surgeons, American College of Physicians, Royal Society of Medicine, London, National Academy of Medicine, Peru, and the National Academy of Medicine, Mexico. He received the honorary degrees of Sc.D. from the University of Pennsylvania in 1930 and LL.D from Yale University in 1933. Dr. Cumming was honorary professor at the University of Santo Domingo, honorary director of the National Public Health Service of Paraguay, member of the Medical Society of the Dominican Republic, member of the Sigma XI and other honor societies.

Dr. Hugh Cumming was, throughout his life, a firm supporter of the ideals of American medicine. He was forthright in his views and dependable in his actions. His friendships were innumerable and his loss is mourned by many great leaders of medicine who held him dear.

**Frank Henry Ewerhardt** ✦ of Richmond Heights, Mo., assistant professor emeritus of physical therapeutics at Washington University School of Medicine, St. Louis, died at the Barnes Hospital, St. Louis, October 15, aged 71, of acute leukemia. Dr. Ewerhardt was born in Sheboygan, Wis., Jan. 25, 1877. In the early 1900's he went to St. Louis, where he became director of the gymnasium and athletics of Smith Academy. In 1904 he joined the staff of Washington University as director of physical training, a position he held until 1913. He received his medical degree from Washington University School of Medicine in 1910. In 1913 he joined the medical faculty at his alma mater as assistant in anatomy; in 1915 he transferred to the department of medicine and in 1922 received his first appointment in the department of physical therapeutics. From 1933 through 1946, when he retired, he was director of physical education and director of university health. Dr. Ewerhardt was a past president and member of the executive council of the American Congress of Physical Medicine, which in September 1948 awarded him the Gold Key for outstanding service in physical medicine. He was a fellow of the American Association for the Advancement of Science, a member of the board of the Registry of Physical Therapy Technicians and a past president of the American Society of Physical Medicine. During World War II he was the health officer in charge, U. S. Army Hospital, Washington University. Dr. Ewerhardt served as consultant in physical medicine rehabilitation to the Veterans Administration, branch office number 9, and to the Council on Physical Medicine of the American Medical Association. He was a member of the original American Board of Physical Medicine, having been certified in 1947, and in 1945 and 1946 of the subcommittee on physical therapy of the National Research Council. He was emeritus chief of physical medicine of St. Louis Children's Hospital, Barnes Hospital, McMillan Hospital, Maternity Hospital and Washington University Clinics. He was co-author of "Therapeutic Exercise," which was published in 1947. He contributed the chapter on the "Use of Heat and Cold" in "Principles and Practice of Physical Medicine" and the chapters on "Physical Exercise" and "Posture" in Glasser's "Medical Physics."

**Walter Clinton Jones** ✦ Florence, Ala.; born in Chicago, May 2, 1874; Northwestern University Medical School, Chicago, 1902; specialist certified by the American Board of Pathology; past president of the Alabama Association of Pathologists; member of the Southern Medical Association, American Society of Clinical Pathologists and the American Association for the Advancement of Science; fellow of the American College of Surgeons; at one time on the faculties of his alma mater, University of Illinois College of Medicine in Chicago, Medical College of Alabama, Mobile, and the Birmingham-Southern College; served on the staffs of the Employees' Hospital of the Tennessee Coal, Iron and Railroad Company in Fairfield, Bessemer (Ala.) General Hospital, Norwood, St. Vincent's and East End Memorial hospitals in Birmingham, Colbert County Hospital, Sheffield, and the Evanston (Ill.) Hospital; died October 27, aged 74, of heart block.

**Eldwin Roy Witwer** ✦ Detroit; born in Blake, Ontario, Canada, Aug. 23, 1890; Detroit College of Medicine and Surgery, 1914; assistant professor of radiology at the Wayne University College of Medicine; specialist certified by the American Board of Radiology; councilor of the Sixteenth District of the Michigan State Medical Society; past president of the Radiological Society of North America; past president and for many years secretary and treasurer of the Detroit Roentgen Ray and Radium Society; member of the commission on public health of the American College of Radiology; member of the American Roentgen Ray Society; affiliated with the Harper, Children's and Cottage hospitals; died November 2, aged 58.

**Theodore C. F. Abel,** Chicago; Jenner Medical College, Chicago, 1903; for many years medical director of Abel Laboratories; died in St. Francis Hospital, Evanston, Ill., October 24, aged 79, of thrombophlebitis of the right leg and cardiac insufficiency as the result of injuries received in a bus accident.

**William Howard Allen,** Mansfield, Mass.; Harvard Medical School, Boston, 1894; member of the American Medical Association; past president of the North Bristol Medical Society; served during World War I; for many years member

of the school committee and board of health; died recently, aged 80, of coronary thrombosis.

**Ralph Nordock Arnold,** Greenfield, Ind.; the Hahnemann Medical College and Hospital, Chicago, 1917; member of the American Medical Association; served during World War I; county health commissioner; died October 19, aged 56, of coronary occlusion.

**Charles E. Baker,** Marietta, N. Y.; Eclectic Medical College of the City of New York, 1882; died in Sullivan recently, aged 90, of myocarditis and arteriosclerosis.

**Cornelius B. Barry,** Woonsocket, R. I.; College of Physicians and Surgeons, Baltimore, 1907; state senator; died recently, aged 69.

**Frederic Huntington Bartlett** ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1905; specialist certified by the American Board of Pediatrics, Inc.; member of the American Pediatric Society; served during World War I; author of "Infants and Children: Their Feeding and Growth"; for many years affiliated with the Babies Hospital; died October 19, aged 76, of coronary occlusion.

**Munson Russell Bixel,** Bluffton, Ohio; Eclectic Medical College, Cincinnati, 1925; served as vice president of the Allen County Board of Health and member of the board of trustees of the Bluffton College; affiliated with Bluffton Community Hospital, where he died October 3, aged 52, of coronary thrombosis.

**Harriet M. Carbaugh,** Lansing, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1888; died October 7, aged 85.

**Hayes William Carlin,** Los Angeles; Northwestern University Medical School, Chicago, 1909; died in Seattle October 28, aged 62, of coronary occlusion.

**Scott Parker Child** ✠ Kansas City, Mo.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; an Affiliate Fellow of the American Medical Association; past president of the Jackson County Medical Society; at one time vice president of the Council of Social Agencies; died in the Municipal Tuberculosis Hospital October 6, aged 81, of bronchopneumonia and tuberculosis of the lungs.

**William B. Cochrane,** Rochester, N. Y.; University of Buffalo School of Medicine, 1896; member of the American Medical Association; at one time health officer of the town of Brighton; served on the staffs of Genesee Hospital and Park Avenue Hospital, where he died October 21, aged 76, of arteriosclerotic heart disease.

**J. Thomas Coghlan,** Rochester, N. Y.; St. Louis College of Physicians and Surgeons, 1927; served during World War I; died October 25, aged 52, of coronary occlusion.

**Charles Joseph Cooney,** Oelwein, Iowa; State University of Iowa College of Medicine, Iowa City, 1895; formerly health officer; on the staff of Mercy Hospital; died October 11, aged 75, of arteriosclerosis and bronchopneumonia.

**Robert Fulton Elvington,** Lake View, S. C.; Medical College of the State of South Carolina, Charleston, 1912; member of the American Medical Association; died October 5, aged 62, of heart disease.

**Walter Rudolph Evans,** Jackson, Ohio; Starling Medical College, Columbus, 1896; past president of the Jackson County Medical Society; formerly county coroner; died in Holzer Hospital, Gallipolis, recently, aged 75, of carcinoma of the prostate.

**James Farrage,** Corona, Calif.; University of Southern California School of Medicine, Los Angeles, 1934; member of the American Medical Association; died October 4, aged 48, of heart disease.

**Jesse Rideout Grimes,** Dumont, N. J.; Harvard Medical School, Boston, 1899; served during World War I; for many years president of the board of health and school physician; affiliated with Holy Name Hospital, Teaneck, and the Englewood (N. J.) Hospital; director of Dumont Savings & Loan Association; died October 29, aged 73, of coronary disease.

**Charles Cotton Harrold,** Macon, Ga.; Columbia University College of Physicians and Surgeons, New York, 1902; member of the American Medical Association; fellow of the American College of Surgeons and the American Association for the Advancement of Science; past president of the Chattahoochee Valley Medical and Surgical Association; served overseas during World War I; affiliated with the Middle Georgia Sanatorium and the Macon City Hospital; director of Citizens and Southern National Bank; died October 11, aged 70, of coronary disease.

**Leo Eugene Hayes,** Richmond, Va.; Medical College of Virginia, Richmond, 1927; served during World War II; died in Phoenix, Ariz., recently, aged 53, of heart disease.

**Wiley De Barr Hickey** ✠ Leipsic, Ohio.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900; past president of the Northwestern Ohio Medical Association and the Putnam County (Ohio) Medical Society; veteran of the Spanish American War and World War I; formerly mayor of Leipsic; served on the staffs of Memorial and St. Rita's hospitals in Lima; died in Kutztown, Pa., recently, aged 73, of coronary thrombosis.

**George Howard Jantzen,** Brooklyn; Long Island College of Medicine, Brooklyn, 1947; intern at the Kings County Hospital, where he died recently, aged 25, of Landry's disease.

**James Johnston** ✠ Los Angeles; M.B., University of Toronto Faculty of Medicine, 1884; M.D., Trinity Medical College, Toronto, 1884; an Affiliate Fellow of the American Medical Association; for many years a major-surgeon of the Sixteenth Regiment, Pennsylvania National Guard; served during the Spanish-American War; affiliated with the Hollywood Hospital; died in the Veterans Administration Hospital, West Los Angeles, October 27, aged 85, of arteriosclerosis.

**Marvin Lamb** ✠ Jacksonville, Texas; Baylor University College of Medicine, Dallas, 1935; past president of the Cherokee County Medical Society; died recently, aged 43, of pneumonia.

**Louise Doddridge Larimore** ✠ Greenwich, Conn.; Woman's Medical College of Pennsylvania, Philadelphia, 1915; specialist certified by the American Board of Pathology, Inc.; member of the American Society of Clinical Pathologists; for many years pathologist at the Greenwich Hospital; died recently, aged 59.

**Max Lehman** ✠ Glendale, N. Y.; Cornell University Medical College, New York, 1907; for many years examining physician for the Prudential Life Insurance Company; formerly on the staff of Bushwick Hospital in Brooklyn; died in Bethany Deaconess Hospital in Brooklyn, October 16, aged 68, of injuries received in a fall.

**George Clenon Overstreet** ✠ Lakeland, Fla.; Emory University School of Medicine, Atlanta, 1917; served an internship and residency at the Detroit Receiving Hospital; member of the Southern Medical Association and the American Association of Industrial Physicians and Surgeons; affiliated with the Morrell Memorial Hospital, where he served as superintendent; died in the Tampa Municipal Hospital, in Tampa, September 14, aged 55, of subarachnoid hemorrhage.

**Frederick D. Reardon,** Bowling Green, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; University and Bellevue Hospital Medical College, New York, 1901; past president of the Warren County Medical Society and of the Third District Medical Society; medical examiner for Warren County during World Wars I and II; died in the Pewee Valley Sanitarium and Hospital in Pewee Valley, September 27, aged 71.

**Charles Henry Slosson,** Youngstown, Ohio; Homeopathic Hospital College, Cleveland, 1888; died in Cleveland September 30, aged 82, of carcinoma.

**H. Brooks Smith** ✠ Bluffton, Ind.; Indiana University School of Medicine, Indianapolis, 1932; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; served an internship and residency at Indianapolis City Hospital; associated with the Cayler-Nickel Clinic; died October 18, aged 40, of malignant hypertension.

**Melvin Albert Vogtel,** Minneapolis; Rush Medical College, Chicago, 1916; died in Asbury Hospital recently, aged 56, of cerebral hemorrhage.

**Frances Theodosia McDonald Wallace,** Pittsburgh; University of Wooster Medical Department, Cleveland, 1896; for many years a member of the staff of Presbyterian Hospital, where she was a member of the board of trustees for many years; served a four year term on the board of trustees of the State Hospital; died October 1, aged 84, of arteriosclerotic heart disease.

**Hugh Herbert Williams Sr.,** Sparta, Wis.; Rush Medical College, Chicago, 1896; member of the American Medical Association; veteran of the Spanish-American War; health officer and police and fire commissioner; affiliated with St. Mary's Hospital; died in Minneapolis October 7, aged 79, of coronary thrombosis.

**Frederic John Woodhead** ✠ Waukesha, Wis.; Milwaukee Medical College, 1906; served during World War I; a member of the original board of directors of the Waukesha Memorial Hospital; died recently, aged 68, of carcinoma.

**Julius Francis Zielinski** ✠ Rochester, N. Y.; University of Buffalo School of Medicine, 1929; on the staff of St. Mary's Hospital; died suddenly October 13, aged 42.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

Nov. 13, 1948.

### The Troubles of the National Health Service

From all over the country comes the cry of doctors' offices overcrowded by persons, many of whom have little or nothing the matter, seeking medical advice. What may happen if we have a winter epidemic of some kind is a nightmare for the physician. The demands for drugs and apparatus is excessive. For the first three months of the service the national bill for eye testing and spectacles amounted to nearly $4,000,000, for drugs $7,600,000 and for dentists, including dentures, $4,900,000. These figures do not include the cost of treatment and appliances provided through the hospitals.

A much greater fall than was anticipated has taken place in private practice, both general and special. Persons who were expected to continue as private patients have taken advantage of the free National Health Service. The Minister of Health, Mr. Bevan, congratulated himself on the number of persons of the middle class who were using the service, and said that for them a doctor's bill was often an expense that they could not afford. But he omitted to say that a great cause of their trouble was the confiscatory taxation continued since the war by the Labor Government.

An abuse of the Health Service has occurred the extent of which cannot be stated because of the secrecy of the practice. A woman obtains a prescription from a doctor for which she has little if any need. Perhaps she shams illness. She takes the prescription to a pharmacist and trades the prescription for cosmetics or other things which he sells. The pharmacist has no difficulty in getting payment for the prescription, as he returns it with those that he has dispensed. Both score over this fraud. The woman obtains her cosmetics for nothing and the pharmacist probably makes an increased profit on this sale of cosmetics.

### The Rush for Spectacles

The opportunity of "something for nothing" has produced a rush for spectacles under the National Health Service. This is so great that the time for an appointment with an optician to the issue of spectacles is at best about four weeks and at worst three months. The delay is mainly due to a shortage of lenses. There is also a shortage of skilled workers and of machinery for grinding. Before the period of the National Health Service the output of spectacles amounted to between 4,000,000 and 5,000,000 a year. The ophthalmic industry now places the demands at nearly 8,000,000 a year. The cost will amount to about $80,000,000 a year. It is believed that 40 per cent of the population will require some aid to vision.

### Treatment of Pulmonary Tuberculosis with Streptomycin

A committee appointed two years ago by the Medical Research Council to plan clinical trials of streptomycin in pulmonary tuberculosis has presented the most important report on this subject ever made in this country. The work was done by clinicians and pathologists in various hospitals, and comparison was carefully made with controls. Only once before has a drug been submitted to controlled trial in this unpredictable disease. This was in 1931, when the gold treatment was found to be unsuccessful. The present trial was restricted to persons aged 15 to 30 years with acute progressive tuberculosis of both lungs unsuitable for collapse therapy, a form hitherto treated only by rest in bed. Such cases are not common, but a trial of streptomycin was made at 7 centers in 55 cases, while in 52 similar cases the patients were treated by rest in bed alone. All the patients were kept in bed on the same general regimen, but the former group received 2 Gm. of streptomycin daily by intramuscular injection, usually for four months. The results were assessed after six months. By then 4 of the streptomycin-treated patients and 14 of the controls had died, a difference which would not have occurred by chance once in one hundred times. Considerable improvement was observed in 27 (51 per cent) of the patients treated with streptomycin, but in only 4 (8 per cent) of the controls. The probability of occurrence of such a difference by chance is less than 1 in 1,000,000. At the end of a year 12 streptomycin-treated patients and 24 controls were dead, and the percentage improved had risen to 31 in the controls, while in the streptomycin cases it remained much the same, 56. Toxic effects of streptomycin were never severe enough to necessitate cessation of treatment, though giddiness, nausea and vomiting were common.

The conclusion drawn is that streptomycin can be of great value in acute phthisis, especially in early cases before cavities have formed. But it is not a "cure" for pulmonary tuberculosis. In these trials no patient was freed from infection. Nor does it render other treatment obsolete. It must be used with discrimination. Under the treatment the ordinary streptomycin-sensitive tubercle bacillus is rapidly replaced by a resistant bacillus. This means that the drug may be effective only once during an illness, and the time to give it must be carefully chosen. For the community there is the danger that unsuccessfully treated patients may disseminate streptomycin-resistant bacilli to others, producing many cases which would not respond to treatment with streptomycin.

### New Institute for the Postgraduate Study of Ophthalmology

The Institute of Ophthalmology has been formed by the amalgamation of the three London ophthalmic schools—Moorfields, Westminster and the Central Eye Hospital. The institute has been opened as one of the federated institutes of the British Postgraduate Federation of London University. The amalgamation affords a wider scope for teaching and research. A rearrangement of the hospitals' joint facilities has freed for the use of the institute the buildings formerly used by the Central Eye Hospital. The amalgamated hospital is stated to be the largest eye hospital in the world. At the opening ceremony addresses were given by Sir John Herbert Parsons, Prof. Alan Woods, director of the Wilmer Institute, Baltimore, and Prof. H. J. M. Weve, head of the eye institute, Utrecht. The two latter conveyed the good wishes of American and European ophthalmologists. Postgraduate students will come to the institute from all over the world, as they did to its famous predecessors.

## THE NETHERLANDS

*(From Our Regular Correspondent)*

AMSTERDAM, Nov. 15, 1948.

### Jongbloed's Mechanical Heart

In the beginning of 1948 Dr. J. Jongbloed, Professor of Physiology in Utrecht (Netherlands) published a paper in the *Nederlandsch Tijdschrift voor Geneeskunde* (**92**: 1065, 1948) about his work on the mechanical heart and lung. The function of the artificial heart is to replace the organic heart temporarily. The surgical treatment of the heart might improve considerably if it were possible to empty the heart of blood completely or nearly so. As technically it is practically impossible to insert the pulmonary circulation into a mechanical heart system, the use of an artificial heart involves the use of an artificial lung. The whole device might also be used in lung operations, and also in cases of temporary dysfunction of the heart (diph-

theria) or the lungs (pneumonia, etc.). The author believes that it is desirable to maintain the circulation in the whole subject, not just in the brain, because it is not sure that the tissue not perfused will not be damaged, if for any reason a longer use of the mechanical system would be necessary. In this method the heart and lungs are out of function, but their nutritive blood supply is intact, as well as that of the other parts of the organism. The continuance of the coronary circulation seems important for the heart muscle; this is a great advantage, with the disadvantage, however, that the coronary blood flow may cause difficulties during intracardial operations. For the rest it will not be impossible to overcome these difficulties.

In preliminary experiments Professor Jongbloed and his staff studied, in dogs with widely opened thorax, the behavior of heart and lungs when empty of blood for one or more hours during the artificial circulation. The results were satisfactory; both resume their normal functions immediately when the artificial device is stopped. In these experiments T shaped cannulas were inserted in the venae cavae and in the aorta; the venae cavae were clamped near the heart, so as to make sure that no blood enters the heart cavities from this side. The single branches of the T cannulas led to and from the artificial heart-lung system. By removing the clamps he could change over at will from the mechanical to the organic circulation, and vice versa.

In further experiments in dogs the procedure was as follows. A flexible catheter was inserted through the vena jugularis externa dextra into the vena cava superior and another through the vena femoralis dextra into the vena cava inferior. Further, a T cannula was brought into each arteria femoralis. By the right mechanical heart the blood is sucked from the venae cavae and pumped to the oxygenator. From here the left mechanical heart drives the oxygenated blood via the T cannulas in the arteriae femorales. Here the blood flows in the normal direction toward the hind limbs and in inverse direction toward the arcus aortae. The aortic branches are normally perfused, the coronary system included; the aortic valves remain constantly closed. The right mechanical heart must be adjusted by changing the stroke volume and frequency so that a maximum of blood is sucked from the venae cavae.

These experiments were very successful. They proved that it is possible to maintain a complete artificial circulation without the use of the animal's heart and lungs, and with only a small surgical procedure. During these experiments the spontaneous respiration of the animals could be totally obstructed without any sign of distress of the animal. If treated aseptically the dog survives and behaves quite normal.

On the basis of these promising experiments Jongbloed constructed a mechanical heart-lung system for future use in man. This apparatus functions semiautomatically, is reliable and has a capacity of more than 10 liters per minute. The oxygenator is of a rather new type; at a minute-volume of 4 liters the oxygen uptake is in the range of 240 cc. per minute; there is no hemolysis. With this new apparatus, the first in the world of the capacity necessary for use in man, a series of experiments is now in progress.

One is fully aware of the fact that many difficulties must still be overcome before the safe use in man is possible and that these experiments and this method and apparatus represent only the first steps on a difficult path. The necessary anticoagulant, for example, may give great trouble. To be absolutely sure that no blood from the venae cavae enters the heart cavities during a heart operation these vessels can be clamped and the blood from the coronary sinus has to be sucked away to clear the field. And so on.

But the first steps must first be taken if one wants to go a new way, and there is good hope that Professor Jongbloed's method and apparatus may prove to be a valuable contribution to the solution of the problem of artificial circulation in man.

## PARIS

*(From Our Regular Correspondent)*

Nov. 20, 1948.

### "Asiaticoside" Treatment in Leprosy, Experimental Tuberculosis and Lupus

P. Boiteau and R. Saracino have just published in the *Médecin Français* a preliminary note on the therapeutic effects of "asiaticoside." Boiteau, when director of the Tananarive Botanical Park, studied the plant Centella asiatica, the sap of which natives used with some success for combating leprosy. The Madagascar antileprosy service has carried on therapeutic trials, first with an extract of this plant and then with the purified substances. Grimes and other Tananarive doctors entrusted with the treatment of lepers with "asiaticoside" have seen an immediate improvement in patients not responsive to any other treatment, and, after a congestive period, disappearance of erythematous patches, softening and resorption of cutaneous and hypodermic leprous tubercles and regression of interstitial keratitis. When the posterior chamber was not involved, patients' vision frequently improved, or at least an important fraction of it. In neural leprosy, attenuation of neuritis and regression of anesthesia are seen. Hansen's bacillus disappears from the nasal mucus in the second week of treatment. All patients treated have been either cured or much improved; failures are the exception. According to these local practitioners, in patients with previous renal infections slight outbreaks of albuminuria and, rarely, hematuria may occur.

Encouraged by the effects of this product on leprosy, Boiteau and Ratsimamanga did research on experimental tuberculous infection in the guinea pig, which will be the subject of a further communication, but they report that in treated animals, even when they do not seem completely cured, only slight lesions are to be seen, whereas control animals show multiple nodular localizations and the viscera containing many tubercles. Later, Boiteau and Saracino began therapeutic tests with "oxy-asiaticoside," a product very soluble in water, prepared through oxydation of "asiaticoside" with permanganate. On account of the congestive effect noted at the beginning of the treatment with "asiaticoside," they have exempted pulmonary tuberculosis and used cases of lupus. Out of 8 patients under treatment, 6 have been improved and 2 are completely cured. The first recovery was in a woman 60 years of age who for twelve years had erythematous lupus of the face, with a large excavation of the nose. After exacerbation of the evolutive signs during the first three weeks, a regression became rapidly apparent; in less than two months recovery was complete; the recovery still persists after two months. The other case is of expanding and ulcerative erythematous lupus, lasting for fifteen years; the soft parts of the nose were destroyed, the upper lip and the right orbit ulcerated. The congestive effect became noticeable by the exacerbation of pain, but as soon as the ninth day epithelization set in and on the twenty-sixth day the lip was almost completely epithelized. In the course of the fifth week, two fresh ulcerations became apparent in the cicatricial tissue, which yielded to two weekly injections. Treatment is still continued, although the patient may be considered cured. No incident due to the treatment has been noted by the authors, no shock, albuminuria, hematuria or fever. Sometimes, they noted, within forty-eight hours after the injection, an impression of heaviness in the lower limbs and a slight fall of arterial pressure.

# Correspondence

## THE FARRIS TEST FOR OVULATION

*To the Editor:*—Dr. Edmond Farris has published a number of articles on his rat test for determining the time of ovulation. His latest paper appeared in THE JOURNAL, Oct. 23, 1948. The essence of these reports is that by noting the degree of hyperemia of the immature rat ovary after injection of the patient's urine the day of ovulation (hereafter referred to as Farris's day of ovulation, or FDO) can be determined. To prove the accuracy of his method he presents data on patients who were inseminated by coitus or artificially on the FDO and who conceived during that same menstrual cycle. This clinical test of his method would be quite acceptable but for one omission. Dr. Farris does not state that the insemination depicted in his charts was the only insemination in the cycle, or that insemination occurred only in a single twenty-four hour period at the FDO. The omission of this statement vitiates the experiment and destroys the logic by which his conclusions are reached. Dr. Farris states that "coitus is interdicted during each testing period," which I understand to be the ten days or so preceding the FDO. When the rat test indicates ovulation, insemination is advised, and conception occurs during the cycle as his data show. So far, so good. But Dr. Farris then discusses this insemination which he advised as if it were indubitably the cause of the conception, and he refers to the date of such insemination as "the day of conception." If coitus also occurred later in the cycle (and there is no indication that it did not also occur later) it might well have been the fertile mating rather than the insemination which Dr. Farris selects as proving his point. Since no clear statement is made in his articles to the effect that insemination occurred at FDO and at no other time in the cycle we must assume that such other inseminations did occur and that one of them might have been fruitful. If we make such an assumption, then we must discard from consideration the 18 cases in which conception followed coitus. Thus, of the 27 original cases there remain the 9 cases of artificial insemination. Five of these were by "homologous donors" which I take to be a new term for husbands. These men were fertile, for conception ensued. But did it result from artificial insemination on FDO or from coitus later in the cycle? Since there is no way of telling we are left with 4 cases to consider, the artificial inseminations by donors. To tabulate them:

| Case | Average Cycle | Insemination | Interval Between Insemination and Next Expected Menses | Comment |
|---|---|---|---|---|
| P. W. (fig. 1)..... .... | 25 days | day 11 | 14 days | A. I. one day after lowest temperature |
| H. Z. (fig. 4)..... | 27 days | day 13 | 14 days | Temp. incomplete |
| F. P. (fig. 4)..... | 28 days | day 13 | 15 days | Temp. incomplete |
| H. K. (fig. 6)..... | 27 days | day 12 | 15 days | Temp. incomplete |

It therefore appears that artificial insemination was performed at the usual time of ovulation, namely fourteen or fifteen days before the next expected period. In only 1 case was the temperature graph complete, and in this case insemination took place on the day following the lowest temperature reading. Of the 27 cases presented this is the sole case which is unassailable and in which it appears certain that insemination on FDO can be fairly correlated with the temperature graph.

The data which Dr. Farris has exhibited do not justify the conclusions that "At least 40 per cent of conceptions took place before there was any change in temperature" and "the use of basal body temperatures for detecting the time of ovulation may serve as an aid in the treatment of infertility in women in about 45 per cent of cases."

PENDLETON TOMPKINS, M.D.,
San Francisco.

*To the Editor:*—Relative to the comments of Dr. Pendleton Tompkins, it may be stated that in the 23 complete cases of the 27 reported, 4 conceptions resulted from a single donor insemination on the day of prediction; 5 resulted from a single insemination with the husband's specimen on the day of prediction. Two of these had coitus later, but within eight hours of the insemination. In these 9 cases, no other intercourse occurred at any time during the cycle. Ten other conceptions resulted from coitus on the predicted day, as follows: 5 from isolated coitus which occurred once only, and at no other time in the cycle; 2 from coitus performed twice within ten hours and at no other time in the cycle, and 3 from coitus performed twice within the twenty-four hour period of the predicted day of ovulation. The 4 remaining persons had coitus on the predicted day of ovulation. In addition to the first coitus, patient J. H. had coitus one, two and nine days later; patient J. K. had coitus five, six, nine, and eleven days later; patient H. R. had coitus three days later, and patient M. B. had coitus three days later.

In summary, in 19 of the 23 complete cases insemination was artificial or by coitus within a twenty-four hour period of the predicted day of ovulation, and at no other time during the entire menstrual cycle.

E. J. FARRIS, PH.D.
The Wistar Institute
Philadelphia.

## COLOMBIAN MEDICAL FEDERATION

*To the Editor:*—I have the pleasure of communicating to you that in the last General Assembly of the Colombian Medical Federation I was designated Secretary of Confederative Relations. On taking charge of the development of this function in the headquarters of the National Office of the Colombian Medical Federation, I wish to assure you of the sympathetic sentiments which Colombian physicians have for the American Medical Association, and to express to you our hope that your Association will continue to advance in your consideration and solution of medical problems which are common to all of us. At the same time, it is a pleasure to me to present through you a cordial salute to the American friends who have worked so much for the ideals of confederation.

This is also an opportune occasion to emphasize the spirit of cooperation and solidarity which Colombian physicians have in connection with the Pan-American Medical Confederation and with each one of the professional associations of the continent which it represents.

I have the honor to inform you that the last General Assembly of the Colombian Medical Federation named the following officers: Honorary President, Dr. Calixto Torres Umana; President, Dr. Alberto Garcia Maldonado; Vice Presidents in Charge of Scientific Matters, Dr. Jose A. Jacome Valderrama and Dr. Gonzalo Montes Duque; Secretaries of Miscellaneous Subjects, Dr. Rafael Peralta and Dr. Jorge Vergara Delgado; Secretaries of Propaganda, Dr. Francisco Geneco Mozo and Dr. Rafael Lopez Ruiz; Secretaries of Confederative Relations, Dr. Jorge Camacho Gamba and Dr. Jose MariaBaena Lavalle; Secretaries of the Treasury, Dr. Pedro C. Rojas Buitrago and Dr. Marco T. Perilla B.; Secretaries of Finance, Dr. Alfonso Tarazona and Dr. Jose Pablo Leyva; Procurator, Dr. Laurentino Munoz.

J. CAMACHO GAMBA, M.D.
Secretary of Confederative Relations of the Colombian Medical Federation, Bogota, Colombia.

# Medical Economics

## THE AGES OF PHYSICIANS IN THE UNITED STATES, 1940 AND 1948

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Chicago

The number of living physicians by states was recently reported by this Bureau in THE JOURNAL (**137**:1550 [Aug. 21] 1948). The punch cards being developed by the Bureau's staff now permit an analysis of the age distribution of living physicians in the United States. Cards have not yet been punched for all June graduates of medical colleges and there is an unavoidable delay in reporting of deaths. These two facts should be kept in mind in any interpretations based on the following statistics.

The total number of physicians reported herein, 199,745, is slightly different from the 199,755 included in the previous report because of subsequent changes in the physician population. Approximately three fourths of all living physicians are in active practice.

Table 1 shows the age distribution of physicians as of July 1, 1948, for the United States based on our current punch card file and the corresponding figure for 1940 as analyzed by the United States Public Health Service from the 1940 Directory of the American Medical Association. Percentage figures are shown in table 1. The ages for only 0.7 per cent of the physicians in 1948 are unknown, whereas 1.4 per cent were unknown in 1940. Excluding the physicians of unknown age, the percentage of all physicians under 50 years of age rose from 57.5 in 1940 to 60.2 in 1948; in the age group 35 to 49 the percentage rose from 31.4 to 36.5. The percentage of all physicians of age 70 and over rose from 8.3 to 11.2. For all age groups except 35 to 49 and 70 and over the 1948 percentages are lower. At this time the Bureau records do not reveal the number of all physicians in each age group who are in active practice. Later tabulations by the Bureau will present the activity distributions by age groups.

TABLE 1.—*Age Distribution of Physicians in the United States, 1940 and 1948*

| | 1940 * | | 1948 † | |
|---|---|---|---|---|
| Age Group | Number | Percent | Number | Percent |
| Under 30 | 20,069 | 11.4 | 21,571 | 10.8 |
| 30-34 | 25,027 | 14.3 | 25,442 | 12.7 |
| 35-39 | 20,829 | 11.9 | 27,056 | 13.6 |
| 40-44 | 17,744 | 10.5 | 25,549 | 12.8 |
| 45-49 | 15,691 | 9.0 | 19,835 | 9.9 |
| 50-54 | 15,661 | 8.9 | 16,738 | 8.4 |
| 55-59 | 15,568 | 8.9 | 14,467 | 7.2 |
| 60-64 | 15,514 | 8.8 | 13,436 | 6.7 |
| 65-69 | 12,211 | 7.0 | 12.143 | 6.1 |
| 70-74 | 7,810 | 4.5 | 10.505 | 5.3 |
| 75-79 | 3,822 | 2.2 | 6,780 | 3.4 |
| 80 and over | 2,719 | 1.6 | 4,863 | 2.4 |
| Unknown | 2,481 | 1.4 | 1,358 | 0.7 |
| Total | 175,146 | 100.0 | 199,745 | 100.0 |
| Mean age ‡ | 47.8 | | 47.5 | |
| Median age | 45.8 | | 44.4 | |

* From data tabulated for individual physicians listed in the 1940 American Medical Directory by statisticians of the United States Public Health Service.
† Tabulated from 3-card file.
‡ Assumed 28 for under 30 and 85 for 80 and over; unknown excluded.

Prior to 1940 there had been a steady increase in the number of physicians graduating from our medical schools. As a result the distribution by age has not become stabilized even in 1948. This probably explains the relatively high percentage now in the age groups 35 to 49 and the low percentage in the age groups 50 to 69. The increasing longevity enjoyed by the general population in the United States is shared equally by the physicians, as indicated by the large percentages in the age groups 70 and over. The speed-up program of medical training during World War II is reflected in the relatively high percentages in the 35 to 49 age group.

The mean age of all physicians of known ages in the United States in 1940 was 47.8 years; by 1948 it had dropped to 47.5 years. The aging of the medical population and the changes in the age distribution have not been sufficiently great in the interval from 1940 to 1948 to cause any decided change in the average age of living physicians. The median age dropped from 45.8 years in 1940 to 44.4 years in 1948, indicative of the increasing number of medical school graduates since 1940. The median is more accurate than the mean in 1940 because an approximate age had to be assumed for the "80 and over" and "under 30" classes in calculating the mean.[1]

TABLE 2.—*Number and Median Age of Living Physicians by States and for the United States, 1948*

| State | Number | Median Age | State | Number | Median Age |
|---|---|---|---|---|---|
| Alabama | 2,227 | 48.1 | New Hampshire | 729 | 44.9 |
| Arizona | 794 | 44.4 | New Jersey | 6,578 | 43.2 |
| Arkansas | 1,728 | 55.2 | New Mexico | 497 | 46.9 |
| California | 16,045 | 45.2 | New York | 30,981 | 43.8 |
| Colorado | 2,216 | 45.5 | North Carolina | 3,367 | 48.4 |
| Connecticut | 3,267 | 42.8 | North Dakota | 464 | 48.5 |
| Delaware | 440 | 43.6 | Ohio | 10,173 | 44.4 |
| Florida | 2,925 | 49.5 | Oklahoma | 2,245 | 50.9 |
| Georgia | 3,126 | 45.5 | Oregon | 1,813 | 44.2 |
| Idaho | 470 | 45.0 | Pennsylvania | 14,742 | 43.0 |
| Illinois | 13,320 | 46.2 | Rhode Island | 1,034 | 44.6 |
| Indiana | 4,404 | 45.5 | South Carolina | 1,519 | 45.9 |
| Iowa | 2,934 | 49.7 | South Dakota | 515 | 48.7 |
| Kansas | 2,206 | 46.6 | Tennessee | 3,255 | 44.8 |
| Kentucky | 2,662 | 48.7 | Texas | 7,868 | 45.4 |
| Louisiana | 3,080 | 38.7 | Utah | 845 | 40.5 |
| Maine | 997 | 49.8 | Vermont | 583 | 43.3 |
| Maryland | 3,715 | 40.3 | Virginia | 3,333 | 44.5 |
| Massachusetts | 9,078 | 42.9 | Washington | 2,774 | 43.2 |
| Michigan | 7,173 | 43.8 | West Virginia | 1,834 | 47.7 |
| Minnesota | 4,290 | 41.0 | Wisconsin | 3,870 | 44.8 |
| Mississippi | 1,507 | 52.9 | Wyoming | 253 | 46.5 |
| Missouri | 5,345 | 47.5 | District of Columbia | 4,118 | 41.7 |
| Montana | 539 | 46.1 | | | |
| Nebraska | 1,666 | 49.3 | United States | 199,745 | 44.4 |
| Nevada | 201 | 49.3 | | | |

Detailed age distributions for each state are not presented herein. The available supply of medical service cannot be measured by crude numbers of living physicians, since they include interns and residents still in training and physicians not engaged in the active practice of medicine due to retirement and special appointments such as teaching, administration, government service and research. An adequate inventory of medical service must also include an evaluation of the contributions of the large force of technicians and medical assistants who enable the modern physician to render far more medical service than was possible only a decade ago.

The state is too large an area for measuring the available medical service personnel. For example, in Utah the heavy concentration of population, hospital and training facilities and physicians in the area of Salt Lake City modifies state figures to an amazing degree and distorts the picture for those living in the large rural areas distant from this important metropolitan center. This accurate analysis of medical service must await the completion of the medical service area study now being made by the Bureau. At that time the punch card records will be sufficiently complete to furnish meaningful data on the age characteristics of the physician supply for areas of proper size in relation to the medical trading habits of the population. There are, of course, many interesting variations in the age distributions of the physicians in different sections of the United States which will be presented by the Bureau in studies now in process and in others being planned.

Subject to the limitations stated, certain interesting facts about the distribution of physicians by states are given in table 2, which shows the number and median age of living physicians in each state. Probably the median ages of physicians in the several states would exhibit a much more uniform pattern if interns, residents and physicians who are not in

1. Ages 28 and 85 were assumed to be the mid points of the two open-end classes, below age 30 and 80 and over for the 1940 data. The 1948 data were available for each year and no mid points were assumed.

active practice were excluded. We are led to this conjecture by the observation that the higher median ages generally are observed in the sparsely populated states. The lower median ages occur in those states where there are a large number of medical schools and hospitals and, consequently, a large number of young physicians holding internships and residencies; this situation occurs primarily in metropolitan areas.

CONCLUSIONS

The average age of all living physicians in the United States in 1948 is slightly lower than in 1940. The percentages under 50 and over 70 years of age have increased. On the whole the typical American physician is slightly younger today than was the typical pre-World War II physician. These facts reflect the relatively rapid increase in the number of physicians since 1940. The medical population has increased 14 per cent, while the total population increased only 12 per cent. Each new physician is destined to remain in the medical population approximately forty years.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts: Ruptured Intervertebral Disk from Repeated Trauma During Employment.**—The plaintiff filed a claim for compensation for total and permanent disability due to an accident suffered during the course of his employment. From a judgment denying his claim, the plaintiff appealed to the court of appeal of Louisiana.

The plaintiff alleged that he was employed by the defendant to work in its manufacturing plant and that while so employed he suffered a severe injury to his back, that he was accidentally injured while engaged in moving heavy alloy hoppers, which was a part of the duties of his employment, and that while pulling and straining and moving said hoppers he suffered the damage to the lower region of his back which resulted in the rupture of an intervertebral disk, which necessitated a major fusion operation. He further alleged that at the time of the accident he considered that he had suffered only a strained back and, for this reason, did not immediately complain to his employer but continued working in an attempt to perform the duties required of him, thereby suffering increasing pain and disability; that within a few days thereafter his back became so painful that he was required to take a sick leave for several weeks, and that, at this time, he reported to the first aid station maintained by his employer on the premises and told the employees there of this back condition; that he remained away from the job for a period of about twelve weeks and was placed in traction and given other treatment by Dr. Anderson and other physicians in New Orleans and Baton Rouge; that within a few weeks following the accident, he reported his condition to Dr. Beam, the regularly retained physician of the defendant, but that he did not make any claim for compensation at that time as he did not understand the nature and extent of his injury and did not know what the prognosis of his condition would be, and, in the meantime, he was receiving his full salary. Both the counsel for the plaintiff and for the defendant agreed that the trial judge dismissed the plaintiff's suit for the reason that he had failed to prove an accident arising out of and within the scope of his employment. The main question, therefore, was whether or not it was necessary for the plaintiff to show a single accident or act of trauma that could have caused the ruptured disk. The plaintiff contended that the testimony in the case conclusively showed that the injury was caused by a series of strains or repeated injuries which were due to the nature of the duties he was required to perform for the defendant.

The facts disclosed that the plaintiff was employed by the defendant in 1940 and that he remained in this employment until September 1945, during which time he did rather heavy manual work. He experienced no difficulty in performing his duties until approximately the middle of 1944 when, while pulling a hopper and putting a hydraulic jack under a hopper, a hot flash went down his right leg and it seemed as though his hip had jumped out of place. He said he was unable to walk for a few minutes. From that time until he terminated his employment in 1945, the plaintiff was under the care of about twelve or more physicians and was in and out of a number of hospitals many times. He underwent many infra-red ray treatments to the lower part of his back. He also underwent heat treatments and wore various braces. In August of 1945 he visited the Ochsner Clinic, where his difficulty was finally diagnosed as a ruptured intervertebral disk and in October of 1945 the disk between the fourth and fifth lumbar vertebrae was removed and a lumbar fusion operation performed. The plaintiff introduced the testimony of seven fellow employees and of a number of physicians who treated him at various times during 1944 and 1945.

After reciting and considering the evidence received in the case, the court of appeal concluded that it was established by the medical testimony that one performing labor such as the plaintiff performed for the defendant, and one having a congenital abnormality such as the plaintiff had, is more susceptible to trauma and, as a result, a ruptured disk than one whose labors are light or one who performs no manual labor at all. The doctors, continued the court, were also in accord that a ruptured disk could be caused by the ordinary performance of such duties as the plaintiff was required to do on various jobs he held while employed by the defendant, that is, that a ruptured disk could come about by repeated minor or small strains or trauma over a length of time. Clearly, said the court, as the plaintiff failed to establish a single strain or accident, his case must then of necessity rest on proof of repeated minor injuries or repeated trauma as a cause for the ruptured disk, which, the court concluded, we believe he has proved. "The testimony convinces us that he suffered a ruptured disk while at work for defendant." Accordingly, the judgment of the trial court denying the plaintiff's compensation was reversed.—*York v. E. I. duPont de Nemours & Co., 37 So. (2d) 68 (La., 1948).*

**Paternity: Variations from Normal Period of Gestation.**—The plaintiff sued for divorce on the ground that the defendant was pregnant at the time of their marriage by an act of intercourse with a person other than the plaintiff, that such fact was concealed from the plaintiff and that the marriage was therefore procured by fraud. From a judgment of the trial court refusing to grant a divorce, the plaintiff appealed to the superior court of Pennsylvania.

Under Pennsylvania law, said the superior court, fraud is a ground for divorce, but the plaintiff has the usual burden of proving his case by clear and satisfactory evidence, and unless there is a preponderance of the evidence in his favor the divorce must be refused.

The parties first met on Oct. 31, 1945, and were married on December 21, having been in each other's company once or twice a week in the meantime. A child was born to the defendant on July 31, 1946, two hundred and twenty-two days after the marriage, but she denied that she was pregnant at the time of the marriage, denied that she had ever had intercourse with any man other than the plaintiff and insisted that the plaintiff is the father of the child.

The plaintiff introduced no evidence to show the defendant's association with any other men, but relied on the statements of two doctors who testified as expert witnesses. One of these doctors, who saw the baby four days after its birth, testified that the normal period of gestation is from 270 to 280 days and that in his opinion the birth in question was a normal birth and the period of gestation normal. The other expert witness who testified on behalf of the plaintiff had never seen the baby but based his testimony on its case history. He testified that according to the description of the baby, its weight, its reactions after born and the care which was used at the hospital, it was his opinion that the baby was a full term baby and that it could not have been conceived after the marriage on Dec. 21, 1945.

The defendant, on the other hand, introduced testimony of the physician who had given her prenatal attention and delivered the child. He testified that he had made internal examinations of the defendant on April 2, April 25, May 23, "some date in June" and on July 25, six days before the birth of the child. In his opinion the defendant had been pregnant three months on April 2 when he first examined her. He was then asked, "Can you definitely say as a practicing physician, in the line of prenatal history and examinations of the patient and the examinations of the baby, that this was not a full term baby?" His answer was, "I would like to emphasize in the light of all three matters, that this was not a full term child in the light of prenatal examination and history of the case and the examination of the baby." He further testified that the "usual period of gestation of a full term baby" is "ten lunar months, nine calendar months or two hundred and eighty days" and "I could not tell and no one could tell whether it was a full term child or not from examination of the baby"; and a "non-full-term baby" can be a normal baby, as this appeared to be.

The court said that the qualifications of the three doctors who appeared as witnesses were not questioned but that the testimony of the doctor who attended the defendant for many months prior to the birth of the child and delivered it was entitled to far more weight than the purely expert opinion testimony of the others. On the basis of all the evidence the court was of the opinion that the plaintiff had not met the burden of proof entitling him to a divorce. Accordingly, the judgment refusing the divorce was affirmed.—*Kissell v. Kissell, 60 A. (2d) 834 (Pa., 1948).*

# Medical Examinations and Licensure

## COMING EXAMINATIONS AND MEETINGS

### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II.* Various Centers, Feb., June and Sept. 1949. *Part II.* April, 1949. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2, Pa.

### EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY, INC.: *Written.* July 15. Various locations. Final date for filing application is April 15. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Avenue, New York 27.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* San Francisco, Feb. 8-10, 1949. New York City, March 23-25. Final date for filing application is Jan. 2. Philadelphia, June 1-3. Final date for filing application is Jan. 2. *Written.* Oct. 17, 1949. Final date for filing application is May 1. Asst. Sec.-Treas., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Jan. 14. *Oral.* San Francisco, March 21-24; New York, June 11-15; St. Louis, Oct. 15-19; Boston, Dec. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC.: *Oral.* Chicago, May 8-14. Final date for filing application is April 1. Sec., Dr. Paul Titus, 1015 Highland Building, Pittsburgh 6.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: *Part I.* Various Centers, April and May. Final date for filing application is Dec. 31. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, May 11-14; Chicago, Oct. 4-7. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Boston, April. Final date for filing application is March 1. Sec., Dr. Robert A. Moore, 507 S. Euclid Ave., St. Louis 10, Mo.

AMERICAN BOARD OF PEDIATRICS: *Oral.* St. Louis, Feb. 18-20. Baltimore, May 7-9. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Rd., Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE: Atlantic City, June 4-5. Final date for filing application is March 15. Sec., Dr. R. L. Bennett, 30 N. Michigan Blvd., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec., Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* May. Final date for filing application is Feb. 15. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March 1949. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Feb. 1950. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18, Minn.

### BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ALASKA: * Juneau, March 1. Sec.-Treas., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS: * Little Rock, June 9-10. Sec., Dr. L. J. Kosminsky, Texarkana. *Eclectic.* Little Rock, June 2-3. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

COLORADO: * Denver, Jan. 4-7. Final date for filing application is Dec. 18. Sec.-Treas., Dr. W. W. King, 831 Republic Bldg., Denver 2.

CONNECTICUT: * Hartford, March 8-9. Secretary to the Board, Dr. Creighton Barker, 258 Church Street, New Haven.

DELAWARE: *Examination.* Dover, Jan. 11-13. *Endorsement.* Jan. 20. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

GEORGIA: *Examination.* June, Atlanta and Augusta. *Reciprocity.* Atlanta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

GUAM: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O. San Francisco, Calif.

HAWAII: *Examination.* Honolulu, Jan. 10-13. Sec., Dr. S. E. Doolittle, 881 S. Hotel St., Honolulu 53.

IDAHO: Boise, Jan. 10-12. Dir., Bureau of Occupational Licenses, Miss Estella S. Mulliner, State House, Boise.

ILLINOIS: Chicago, Jan. 11-13. Superintendent of Registration, Mr. Fred W. Ruegg, State House, Springfield.

INDIANA: *Examination.* Indianapolis, June. Sec., Board of Medical Registration and Examination, Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

MAINE: Portland, March 8-9. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

MASSACHUSETTS: *Examination.* Boston, March 8-11. Sec., Dr. George L. Schadt, 413 E. State House, Boston.

MINNESOTA: * Minneapolis, Jan. 18-20. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Building, St. Paul.

MONTANA: Helena, April 4-6. Sec., Dr. O. G. Klein, First National Bank Building, Helena.

NEBRASKA: * *Examination.* Omaha, June. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Building, Lincoln 9.

NEVADA: Carson City, May 2. Sec., Dr. G. H. Ross, 112 N. Curry Street, Carson City.

NEW HAMPSHIRE: Concord, March 10. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 21-24. Sec., Dr. E. H. Hallinger, 28 West State Street, Trenton 8.

NEW MEXICO: Santa Fe, April 11-12. Sec., Dr. V. E. Berchtold, 141 Palace Ave., Santa Fe.

NEW YORK: *Examination.* Various Centers, Feb. 1-4. Sec., Dr. J. L. Lochner, Jr., 23 S. Pearl St., Education Bldg., Albany.

NORTH CAROLINA: *Endorsement.* Raleigh, Jan. 17. Sec., Dr. Ivan M. Procter, 226 Hillsboro St., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, Jan. 4-7. Act. Sec., Dr. C. J. Glaspel, Grafton.

OREGON: * *Examination.* Jan. 5-7. *Endorsement.* Jan. 21-22. Final date for filing application is Jan. 3. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

PUERTO RICO: *Examination.* Santurce, March 1. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

RHODE ISLAND: * *Examination.* Providence, Jan. 6-7. Chief, Mr. Thomas B. Casey, 366 State Office Building, Providence.

SOUTH DAKOTA: * Pierre, Jan. 18-19. Sec., Dr. G. J. Van Heuvelen, Capitol Bldg., Pierre.

TEXAS: *Examination.* Austin, June 16-18. Sec., Dr. M. H. Crabb, 209 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination.* Salt Lake City, July. Sec., Dept. of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VERMONT: *Examination.* Burlington, Feb. 3-5. Sec., Dr. F. J. Lawliss, Richford.

WASHINGTON: * Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Wotherspoon, Olympia.

WEST VIRGINIA: Charleston, Jan. 3-5. Sec., Public Health Council, Dr. N. H. Dyer, Capitol Bldg., Charleston 5.

WISCONSIN: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

WYOMING: *Examination.* Cheyenne, Feb. 7. Sec., Dr. Franklin D. Yoder, Cheyenne.

* Basic Science Certificate required.

### BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, Feb. 21-26. Sec.-Treas., Dr. C. Earl Albrecht, Box 1931, Juneau.

CONNECTICUT: New Haven, Feb. 12. Exec. Asst., State Board of Healing Arts, Miss Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, April 18-19. Sec., Dr. George C. Ruhland, 4130 Municipal Bldg., East, Washington.

FLORIDA: *Examination.* Gainesville, June 11. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: *Examination.* Des Moines, Jan. 11. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination.* Ann Arbor & Detroit, Jan. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: *Examination.* Jan. 4-5, April, June and Oct. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

RHODE ISLAND: *Examination.* Providence, Feb. 9. Chief, Mr. Thomas B. Casey, 366 State Office Building, Providence.

WASHINGTON: Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Wotherspoon, Olympia.

WISCONSIN: Madison, April 2.. Milwaukee, June 4. Sec., Prof. W. H. Barber, Ripon College, Ripon.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

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Evaluation of "Sexual Behavior in Human Male." A. H. Hobbs and R. D. Lambert—p. 758.
Cerebral Blood Flow and Metabolism in Schizophrenia: Effects of Barbiturate Semi-Narcosis, Insulin Coma and Electroshock. S. S. Kety, R. B. Woodford, M. H. Harmel and others.—p. 765.
Schizophrenic Syndromes as Frustration Reactions. J. M. Neilsen and G. N. Thompson.—p. 771.
Cerebrospinal Fluid Studies in Advanced Dementia Praecox. C. E. Johnson Jr. and Georgia L. A. Johnson.—p. 778.
Follow-Up Report on Series of Posttraumatic Epileptics. A. E. Walker and F. A. Quadfasel.—p. 781.
*Group Psychotherapy as Adjunct Treatment of Epileptic Patients: Preliminary Report. A. L. Deutsch and J. Zimmerman.—p. 783.
Prediction of Huntington's Chorea: Electroencephalographic and Genetic Study. R. M. Patterson, B. K. Bagchi and A. Test.—p. 786.
Bromide Psychoses: Four Varieties. M. Levin.—p. 798.
Hospital Treatment of Involutional Psychoses. D. M. Hamilton and Gladys M. Ward.—p. 801.

**Group Psychotherapy in Epileptic Patients.**—Deutsch and Zimmerman report a plan for the rehabilitation of veterans with convulsive disorders. As part of this program, they introduced the group psychotherapeutic approach. The patients were divided into units of 20. The first half of the first three sessions was devoted to orientation of the patient. The material discussed included history and definition of epilepsy, causes of epilepsy, various types of seizures encountered, the modern treatment, the hereditary factors associated with the disease and the question of marriage of epileptic persons. The second half-hour was devoted to a discussion with the authors as mediators. Further sessions were taken over by representatives from the Vocational Rehabilitation Section, who advised the group as to the various occupational skills and aptitudes which were necessary in future employment. Further meetings were held with members of the patients' families so that they could learn how they could cooperate in relieving the anxieties and tensions resulting from family overconcern. Members of industry and various employment agencies were invited to discuss employability of the epileptic person and attitude of the employer toward the disease. The authors found that after this group therapy the patients were able to view their problems more objectively. They had less fear, anxiety and insecurity. They no longer felt that they were freaks, since there were others similarly afflicted. They were more reassured as to the possibilities of education and training. As the family was brought into the discussion, many of the patients' anxieties and concern in relation to the family were reduced. Employers were willing to work with the group.

### Annals of Surgery, Philadelphia

**128**:1-160 (July) 1948

*Results Following Subtotal Gastrectomy for Duodenal and Gastric Ulcer. F. B. St. John, H. D. Harvey, J. M. Ferrer and R. W. Sengstaken. —p. 3.
Problem of Peptic Ulcer Following Pancreatectomy. F. M. Owens Jr. —p. 15.
Experimental Repair of Common Duct Defects Utilizing Free Vein Graft over Blakemore-Lord Tubes. P. C. Shea Jr. and C. A. Hubay. —p. 21.
Conservative Therapy of Residual Calculi Following Operations on Common Bile Duct: Report of 2 Cases. G. H. Amsterdam and J. A. Sterling.—p. 30.
Blood Fat Levels Following Supradiaphragmatic Ligation of Thoracic Duct. J. L. Ehrenhaft and R. Meyers.—p. 38.
Streptomycin in Surgical Infections: Part V. Infections of Soft Tissues. E. J. Pulaski, F. W. Spicer Jr. and M. J. Johnson.—p. 46.
*Penicillin in Postoperative Treatment of Peptic Ulcer with Perforation and Appendicitis with Perforation. R. B. Brown and L. A. Andrus. —p. 57.
Resurfacing Procedures in Compound Injuries of Lower Extremities. M. L. Lewin.—p. 66.
Urologic Complications of Left Colon Surgery. C. G. Bandler and P. R. Roen.—p. 80.
Sacrococcygeal Teratomata in Infancy: Report of Six Cases. W. Riker and W. J. Potts.—p. 89.
Temporary Interruption of Sympathetic Impulses to Head by Infiltration of Cervical Sympathetic Trunk. H. D. Kirgis and A. F. Reed. —p. 101.
On Use of N. Musculocutaneous for Neurotization of N. Radialis in Cases of Very Large Defects of the Latter. A. S. Lurje.—p. 110.
Use of Mechanically Wound Bobbins for Handling and Dispensing Non-Absorbable Suture Material, with Observations on Tensile Strength and Sterility of Mechanically Wound Suture Material. J. F. O'Neill, L. Shaffner and H. H. Bradshaw.—p. 116.
Carcinoid Tumors of Rectum: Report of 3 Cases, 2 with Metastases. C. Pearson and P. J. Fitzgerald.—p. 128.
Morbidity and Mortality in Talc Granuloma: Report of Fatal Case. A. J. Swingle.—p. 144.
Unusual Complication of Meckelian Diverticulum. C. G. Morlock and J. G. Bennett.—p. 153.

**Follow-Up After Subtotal Gastrectomy for Ulcer.**—During the decade 1936 to 1945, inclusive, 394 partial gastric resections were performed for peptic ulcer at the Presbyterian Hospital in New York. In analyzing the results St. John and his associates gained the impression that there are less immediate postoperative difficulties after the Hofmeister type of resection than after the Polya type. An effort was made in nearly every resection to remove two thirds or more of the stomach. The value of this report lies in the completeness of the record of what has happened to the patients after they have left the hospital. Over 80 per cent of the follow-up records are based on personal interviews, the remainder being the result of communication with patients who could not be reached for interview. Results were satisfactory in 336 of the cases; they were unsatisfactory in 37. There were 18 postoperative deaths, and in 3 cases the available data were unsatisfactory. Few of the patients with results called satisfactory were restricted in their diets; most of them smoked, and many indulged in alcohol. Their life and occupation were not interrupted by recurrence of ulcer symptoms. For persons under age 45, resection is a relatively safe procedure, the hospital postoperative mortality being about 1 per cent. In view of the high percentage of excellent results and the low mortality, and in view of the absence of studies based on long follow-ups in cases in which vagus resection has been performed, the authors lack the evidence to justify younger patients with ulcer to have vagus section performed. It is difficult to dictate the

form of therapy that should be used in persons of the older age group whose ulcer is in the duodenum and in whom carcinoma is almost surely absent. If these patients bleed, their risk of death is relatively higher than in the younger age group. If their symptoms are intractable under a medical regimen, as they often are, one must consider either a different form of medical therapy or surgery. Whereas psychic factors undoubtedly play an important role in relation to ulcers, they have not interfered seriously in many cases in this series with the benefits of surgical treatment. Not a few patients who gave the impression of being psychoneurotic before operation lost this characteristic after being free of their pain or bleeding.

**Penicillin in Postoperative Treatment of Perforated Peptic Ulcer and Appendix.**—Brown and Andrus report on 42 cases of perforated peptic ulcers and 97 cases of perforated appendixes operated on at the Philadelphia Naval Hospital between Jan. 1, 1946, and June 30, 1947. Patients from the Veterans Administration and active duty personnel are included in the series. Since the vast majority of these cases were surgical emergencies, operation was performed by the surgical watch officer, usually a younger surgeon with experience comparable to that of a surgical resident. There was no rigid standardization of surgical procedure, but the postoperative treatment was rather uniform. With few exceptions penicillin was administered postoperatively; 100,000 units every two hours became the accepted initial postoperative dose. Penicillin was maintained at this dosage level for days or even weeks in those cases in which the slightest indication for continuation of therapy persisted. In a group of 42 ruptured ulcers there were 2 deaths, a mortality rate of 4.8 per cent. There were 97 perforated appendixes in a total series of 815 appendectomies. There was 1 death, a mortality rate of 1 per cent for the ruptured appendixes and 0.12 per cent for the entire group.

## Archives of Ophthalmology, Chicago

**39**:261-450 (March) 1948

Experimental Studies of Ocular Tuberculosis: IX. Failure of Penicillin to Affect the Course of Experimental Ocular Tuberculosis. J. D. Kennedy, A. C. Woods, J. Buckley and others.—p. 261.
Spasm of Macular Arteries: Report of Case. Sie-Boen-Lian.—p. 267.
*Pathogenesis of Myopia: New Classification. F. C. Stansbury.—p. 273.
Cranial Epidermoid with Erosion of Roof of Orbit: Report of Case. Isadore Givner and H. Wigderson.—p. 300.
Normal Optic Nerve: I. Classification of Optic Disk Based on Branching of Central Retinal Artery. E. H. Wood.—p. 305.
Effect of Roentgen Therapy on Experimental Ocular Vaccinia in Nonimmune and in Partially Immune Rabbits. G. T. Harrell, C. H. Reid, J. M. Little and others.—p. 313.
Distance Discrimination: III. Effect of Rod Width on Threshold. M. J. Hirsch, M. W. Horowitz and F. W. Weymouth.—p. 325.
Id.: IV. Effect of Aniseikonic Lenses on Distance Discrimination. M. J. Hirsch, M. W. Horowitz, E. L. Walker and F. W. Weymouth.—p. 333.
*Results of Surgical Treatment of Congenital Cataract. W. C. Owens and W. F. Hughes Jr.—p. 339.
Effect of Prism on Corneal Light Reflex. E. Krimsky.—p. 351.
Ligament of Lockwood in Relation to Surgery of Inferior Oblique and Inferior Rectus Muscles. W. H. Fink.—p. 371.

**Pathogenesis of Myopia.**—Stansbury is of the opinion that the diversity and number of etiologic theories of the pathogenesis of myopia indicate that the problem has never been satisfactorily solved. It is difficult to account for the proposal of so many mechanical hypotheses, considering the extent of the possible pathologic changes in the myopic fundus. The author believes that too much emphasis has been placed on the element of axial elongation and that the other pathologic factors have been practically disregarded. He arrives at the conclusion that axial elongation of the eye beyond normal limits is not necessary to myopia. Near work has never been shown to cause myopia, either in school or in adult occupations. There is no proof that overcrowding, poverty, poor health, inferior or superior mentality or bad ocular hygiene can cause myopia. No mechanical basis for myopia has ever been substantiated. There is no evidence that congenital deficiency of the sclera, disorder of growth, imbalance of the extraocular muscles, endocrine dysfunction, or avitaminoses plays any part in the causation of myopia. The author recommends that two types of myopia be differentiated: (1) primary, or physiologic, myopia, and (2) secondary, or pathologic, myopia. Primary myopia is, as far as is known, a biologic variation of refraction and a healthy one. It includes myopia of both high and low degrees, the great majority of cases being of the latter type. It is not possible to say whether the axial length or the refraction of the media is at fault. Secondary myopia is the result of disease of the coats of the eye. It should not be called myopia at all, but this term is used because of long-established custom and because the true cause is not known. The differential diagnosis of the two forms rests on the observation of pathologic changes in the fundus. The relation of other diseases to pathologic myopia has not been determined. It is possible that they play a part in the production of secondary myopia. It is suggested that a low grade chronic choroiditis is the primary lesion in secondary myopia. A classification of myopia is essential for progress in statistical and clinical research on this condition. Differential diagnosis of the two types is of great importance clinically, in therapy and in prognosis. It will prevent the waste of many useful citizens as "myopic cripples."

**Surgical Treatment of Congenital Cataract.**—Owens and Hughes review observations on 148 patients with congenital cataract. They analyze the results of operations performed on 231 eyes at the Wilmer Ophthalmologic Institute between January 1925 and October 1943. Gross associated ocular defects were present in 129 of 231 eyes with congenital cataract. The visual results in these eyes were significantly poorer than in the eyes without such gross ocular defects. The visual results for the patients on whom the operation was performed before 2½ years of age were poorer than for those operated on after this. The visual results were essentially the same whether the congenital cataract was complete or incomplete at the time of operation. Linear extraction or discission with subsequent linear extraction produced better visual results than simple discission in the patients with no associated ocular defects who were operated on after 2½ years of age. Operative and postoperative complications were as frequent in the eyes without associated ocular defects as in the eyes with associated ocular defects. The number of secondary operations necessary to clear the pupillary space was higher after simple discission than after linear extraction or discission with subsequent linear extraction. Complications occur with the same frequency after the extraction of senile as of congenital cataract. The poorer visual results after extraction of congenital cataract are attributed to associated ocular defects.

## California Medicine, San Francisco

**69**:89-178 (Aug.) 1948

Q Fever in Artesia, California. F. W. Young.—p. 89.
*Q Fever in California. E. H. Lennette.—p. 91.
Primary Carcinoma of Lung: Diagnosis by Cytologic Studies of Sputum and Bronchial Secretions. S. M. Farber, M. A. Benioff and G. Tobias.—p. 95.
Practical Principles of Psychotherapy for Non-Psychiatrically Trained Physician. E. Ziskind.—p. 100.
Pancreatic Lithiasis and Calcification: Study of 22 Cases in Series of 35,000 Necropsies. W. D. Bullock and H. A. Edmondson.—p. 104.
Pediatrician's Observations on Mental Hygiene. V. E. Stork.—p. 109.
Treatment of Cardiovascular Syphilis. O. A. Blomquist.—p. 111.
Intraocular Foreign Bodies in Naval Personnel. H. Lucic.—p. 114.
Environmental Survey in Diagnosis of Allergic Disorders. N. Shure.—p. 120.
Further Experiences with Pontocaine-Dextrose Ephedrine for Spinal Analgesia. A. J. Martinson and F. E. Leffingwell.—p. 123.
Inflammation as Considered by Radiologist. T. M. Fullenlove.—p. 127.
Laboratory Procedures in Diagnosis of Brucellosis. A. G. Bower and J. S. Chudnoff.—p. 131.
Influence of Mercurial Diuretics on Excretion of Sodium, Potassium and Chlorides. D. E. Griggs and V. J. Johns.—p. 133.

**Q Fever in California.**—Lennette states that a field laboratory has been established for the study of Q fever in California. The causal agent of Q fever is a rickettsia, which etiologically places this disease in the group to which belong epidemic and murine typhus, scrub typhus, Rocky Mountain spotted fever, boutonneuse fever and rickettsialpox. Morphologically and tinctorially, Rickettsia burneti resembles the other rickettsiae, but in other respects it differs from them. Thus, the organism is filtrable; it forms large microcolonies strikingly similar to those seen with psittacosis virus in infected cells in the mouse spleen; it produces no soluble antigen, nor does it produce agglutinins to the "X" strains of Bacillus proteus; also, the rash seen with other rickettsial diseases is absent in Q fever. Because of these characteristics which set off the Q fever

organism from the other rickettsiae, it was proposed by Bengtson, Steinhaus and others that the organism be placed in a new genus to be known as Coxiella. The incubation period is from fourteen to thirty-two days. The symptoms in the early stages of Q fever are not different from those encountered in many other febrile conditions and afford no means of distinguishing this disease from others such as influenza, brucellosis, the enteric fevers and meningitis. Laboratory examinations provide no assistance. A definite diagnosis of Q fever is made by isolation of the rickettsia through inoculation of blood into guinea pigs or by showing that complement-fixing antibodies develop during the illness. For the serologic diagnosis of rickettsial and virus diseases, two specimens of blood, one taken in the early, acute stage of the illness and a second taken later in the convalescent phase, are required, since diagnosis depends on the demonstration of the appearance or rise in titer of specific antibodies. Therapy is entirely symptomatic and supportive.

## Canadian Medical Association Journal, Montreal

**59**:101-200 (Aug.) 1948

*Use of Combined Antigens in Immunization of Infants. D. S. Fleming, L. Greenberg and E. M. Beith.—p. 101.
*Streptomycin in Treatment of Tuberculosis: Report of Its Use in a Series of 100 Cases. G. F. Kincade, G. D. Saxton, P. W. Morse and A. K. Mathisen.—p. 105.
Unusual Hereditary Progression in 8 Cases of Friedreich's Ataxia. J. Saucier.—p. 112.
Neuro-Humoral Aspects of Peptic Ulcer Formation. J. Wener and H. E. Hoff.—p. 115.
Total Gastrectomy: Report of 11 Cases. F. Roy and J. Turcot.—p. 140.
Psychotherapy in Schizophrenia. D. S. Lindsay.—p. 142.
Intersexuality: Report of Case. D. D. Kulcsar.—p. 144.
Cell Smears in Diagnosis of Carcinoma. E. M. Robertson.—p. 148.
Horner's Syndrome Due to Osteochondroma of First Rib. J. F. Simpson.—p. 152.
Regional Anesthesia. J. J. Carroll and H. B. Graves.—p. 156.
Epidemic of Acute Lumbar Pain. A. Erdei.—p. 159.

**Combined Antigens in Immunization of Infants.**—Fleming and his associates tried to find answers to the following questions: 1. Must immunizing preparations be given individually, or can they be combined in order to reduce the number of inoculations? 2. Will a mixing of materials adversely affect the immunizing properties of the individual components? 3. Is the reaction produced by a mixture likely to be more severe? The authors present observations on infants observed at the Child Welfare Association of Montreal. The average age of the infants was 4 months. It was found that the response to diphtheria toxoid is substantially enhanced when it is given in combination with pertussis vaccine or with pertussis vaccine and tetanus toxoid. The immunizing efficiency of pertussis vaccine is not appreciably affected by its use in mixtures containing diphtheria and tetanus toxoids. Satisfactory immunization with tetanus toxoid can be achieved when it is combined with diphtheria toxoid and pertussis vaccine. Severity of reaction following inoculation was not increased by the use of mixtures of antigens. Public acceptance of active immunization for infants will be increased if mixtures of antigens can be used.

**Streptomycin in Tuberculosis.**—Kincade and his associates review observations on 100 patients with various forms of tuberculosis who were treated with streptomycin. At first the dosage of streptomycin was 3 Gm. daily given in divided doses every three hours. This was later reduced to 2 Gm. and since Nov. 1, 1947 has been 1 Gm. daily, divided in two doses and carried on for eight weeks. The results with the higher dosage and frequent injections were not found to be superior to the present course of 1 Gm. daily. The patients have been followed for from two to ten months since the completion of the treatment. In a 2 year old boy with tuberculous meningitis a remission resulted after fifty-eight days of treatment with streptomycin, but six months later he showed signs of recurrence which again yielded to treatment with streptomycin. None of the other 6 patients with tuberculous meningitis are alive today. The authors feel that streptomycin is most successful in uncomplicated meningitis of children. Results are disappointing in adults with other tuberculous lesions, though life may be prolonged. In miliary tuberculosis it is most useful in the acute exudative type in which the antibacterial effect of streptomycin helps the patient's natural defensive processes to control the disease. When it is combined with ordinarily accepted forms of treatment some patients who formerly had a hopeless prognosis can be saved. It is also indicated to control fresh spread superimposed on chronic disease. But, since the suppressive effect of streptomycin is not permanent because of the development of bacterial resistance, administration should be timed to coincide with any surgical procedure contemplated. In chronic fibrocaseous tuberculosis unsuitable for surgery the use of streptomycin is justified only because of the symptomatic improvement which it produces. Streptomycin is definitely indicated in ulcerations of the larynx or bronchi. It is useful in the treatment of tuberculous sinuses, adenitis and gastrointestinal tuberculosis. In patients in whom streptomycin was used as an adjuvant to surgical treatment the results were most encouraging. By controlling acute spread it was possible to perform operative procedures on patients who could not have been treated surgically without streptomycin. In primary tuberculosis and in minimal lesions that can be controlled by other means streptomycin is not indicated.

## Cancer, New York

**1**:177-356 (July) 1948. **Partial Index**

*Complete Excision of Pelvic Viscera for Advanced Carcinoma: One-Stage Abdominoperineal Operation with End Colostomy and Bilateral Ureteral Implantation into Colon Above Colostomy. A. Brunschwig.—p. 177.
Papillary Adenomas of Large Intestine: Clinical and Morphologic Study of 48 Cases. D. A. Sunderland and G. E. Binkley.—p. 184.
Diagnosis of Bronchogenic Carcinoma by Smears of Bronchoscopic Aspirations. D. G. McKay, P. F. Ware, D. A. Atwood and D. E. Harken.—p. 208.
Cytologic Studies of Sputum and Bronchial Secretions in Diagnosis of Cancer of Lung. A. A. Liebow, G. E. Lindskog and W. E. Bloomer.—p. 223.
Bronchogenic Carcinoma: Comparison of Two Consecutive Series of 100 Cases Each. G. E. Lindskog and W. E. Bloomer.—p. 234.
Obscure Axillary Lymph-Node Metastasis in Carcinoma of Breast. O. Saphir and G. D. Amromin.—p. 238.
Sympathetic Ganglioneuroma Cultivated in Vitro. Margaret R. Murray and A. P. Stout.—p. 242.
Histochemical Studies on Abnormal Growth of Human Endometrium: I. Alkaline Phosphatase in Hyperplasia and Adenocarcinoma. W. B. Atkinson and S. B. Gusberg.—p. 248.
Distribution of Radioactivity in Mouse Following Administration of Dibenzan-Thracene Labeled in 9 and 10 Positions with Carbon 14. C. Heidelberger and H. B. Jones.—p. 252.
Roentgenographic Appearance of Renal Cancer Metastasis in Bone. R. S. Sherman and T. A. Pearson.—p. 276.
Glandlike Elements in Peripheral Neurosarcoma. A. G. Foraker.—p. 286.

**Excision of Pelvic Viscera for Advanced Carcinoma.**—Brunschwig presents an operation devised for the total excision of all pelvic viscera, en masse, for advanced carcinoma. One diagram shows levels of transection of ureters and of pelvic colon; another shows conditions at end of operation, indicating the area from which peritoneum has been stripped as well as pelvic viscera removed. The peritoneal stripping has extended above the level of the common and external iliac vessels. The midline colostomy is shown. Both ureters have been implanted into the colon a short distance above the colostomy. The operation was performed on patients with the most advanced stages of pelvic cancer—a procedure of desperation since all other attempts to control the disease had failed. Because of the advanced stage of their disease, it is not to be anticipated that many, if any, of these patients will survive for prolonged periods. Two patients among those who have survived, did experience periods of relief and return to almost normal existence, but then developed metastases and succumbed. Varying degrees of palliation have been attained, for which reason the procedure is deemed justified. The author summarizes the status, as of April 10, 1948, of 22 patients who underwent total excision of the pelvic viscera. None of the patients died during the operation, but 5 died during the postoperative period after an average of eight days. Thus the surgical mortality is less than 25 per cent. The operation demonstrates the extent to which modern preoperative and postoperative supportive treatment permits extensive surgery; that a colostomy with both ureters implanted into the colon above is a feasible procedure and affords a situation compatible with normal physical activity, and that complete deperitonealization of the pelvis may be carried out and the small intestines permitted to descend into it without subsequent development of intestinal obstruction.

## Georgia Medical Association Journal, Atlanta

**37**:289-328 (Aug.) 1948

*Management of Residual Common Duct Stones. D. Shepard.—p. 289.
Surgery of Thyroid: Review of Cases. C. H. Richardson and C. H. Richardson Jr.—p. 293.
Early Ambulation in Major Abdominal Surgery. I. L. Greenberg. —p. 298.
Embolectomy from Bifurcation of Aorta: Case Report. T. C. Davison and A. H. Letton.—p. 303.
Care of Lungs During Pregnancy. A. W. Hobby.—p. 304.
Role of General Practitioner, General Surgeon, and Specialists—Where do We Go from Here? J. M. Barnett.—p. 313.

**Common Duct Stones.**—Shepard says that other investigators have found choledocholithiasis in 13 to 20 per cent of all patients harboring gallstones and nearly 1 in every 4 persons with cholelithiasis has at necropsy been found to harbor a stone in the common bile duct. As more explorations of the common bile duct are undertaken more choledocholithiasis is revealed, but there is an inevitable higher incidence of residual common duct stone. Postoperative cholangiography should be used routinely before removal of the common duct drain, as lack of symptoms with the drainage system clamped is an unreliable index of presence or absence of residual stone. If residual common duct stones are found on cholangiography, the more conservative nonsurgical methods of removal should be tried. Irrigation of the common duct drain with solution, the instillation of 1:500 dibucaine hydrochloride solution and perhaps Best and Hickens' regimen may be tried. This consists of the use of antispasmodics, magnesium sulfate and olive oil by mouth, and T tube irrigation with isotonic sodium chloride solution followed by instillation of olive oil into the T tube in conjunction with large doses of bile salts orally. If nonsurgical measures fail to remove the stone, secondary choledochotomy and mechanical removal are necessary.

## Journal of Aviation Medicine, St. Paul

**19**:221-304 (Aug.) 1948

Minnesota Multiphasic Personality Inventory: Differentiation of Psychologically Good and Poor Combat Risks Among Flying Personnel. L. S. Jennings.—p. 222.
Simulated High Altitude Following Whole-Body Radiation of Mice. W. W. Smith, R. Dooley and E. C. Thompson.—p. 227.
Study of Methods of Intentionally Crashing Aircraft with Purpose Toward Survival of Personnel. H. R. Bierman.—p. 238.
Effects of Decompression: 70 Subjects Repeatedly Exposed to Simulated Altitude of 20,000 Feet During Approximately One Month. H. A. Smedal and A. Graybiel.—p. 253.
Sunburn as Cause of Temporary Lowering of Blackout Threshold in Flyers. A. Graybiel, J. L. Patterson Jr and J. M. Packard.—p. 270.
*Ruptured Intervertebral Disk from Positive Acceleration. R. S. Shaw. —p. 276.
Comprehensive Graph for Collection of Noise and Vibration Data. S. Lippert.—p. 279.
Practical Testing and Treating of Aircraft Drinking Water. F. H. Shillito and M. K. Peetz.—p. 287.
*Methylene Blue, an Antidote to Altitude Sickness. M. M. Brooks. —p. 298.

**Ruptured Intervertebral Disk from Acceleration.**—Shaw presents 2 instances of back injury appearing after exposure to positive acceleration. The first is a case of ruptured intervertebral disk proved at operation. The second, although not a proved case, presents the syndrome typical of ruptured disk. These cases have in common an awkward, flexed position of the back during a "pull-out." This is probably the reason that these men suffered injury from accelerations ordinarily considered well below the tolerance limit for back injury. Under positive acceleration this flexion would increase and result in severe strain on the posterior longitudinal ligament and its adjacent annulus fibrosis. At the same time the nucleus pulposus would be compressed and forced against these strained posterior supports. The likelihood of posterior herniation of the nucleus pulposus is great in these circumstances. The author stresses that it is advisable to maintain an erect spine during exposure to positive acceleration whether in curvilinear flight or in the ejection seat.

**Methylene Blue in Altitude Sickness.**—In the experiments described by Brooks the method used was to go by auto from about sea level at Lima to Morococho at 14,900 feet (4,542 meters), via La Cima at 15,600 feet (4,775 meters), in approximately four hours. At Morococho lunch was served, and after an hour or more the descent to sea level was again made. Twelve volunteers were taken for the first excursion without reference to any tests. Of these, 6 were given a capsule of charcoal as a control, and 6 were given a capsule containing 0.05 Gm. of methylene blue. Half of each group became ill irrespective of treatment, and the conclusion that a larger dose of methylene blue was indicated was tested in the next experiment. In the second excursion only those who had been ill were selected. They were given a capsule containing 0.2 Gm. of methylene blue before retiring at night and again 0.2 Gm. before ascending the mountains. This dose proved to be effective, as none became ill. There were two more trips of six subjects each, in which this dose of methylene blue was given to each of the fresh recruits, resulting in the absence of symptoms in each case. Methylene blue speeds up the rate of combination of hydrogen with oxygen, thus compensating for the reduction in oxygen pressure found at high altitudes.

## Journal of Immunology, Baltimore

**59**:331-410 (Aug.) 1948

Action of Urea and Some of Its Derivatives on Bacteria: VIII: Antibacterial Activity of Hexyl Carbamate, Alone and in Combination with Sulfonamides, and Its Effect on Para-Aminobenzoic Acid. L. Weinstein.—p. 331.
Donovania Granulomatis: Cultivation, Antigen Preparation, and Immunologic Tests. A. D. Dulaney, K. Guo and H. Packer.—p. 335.
Immunologic Studies of Cholera Filtrates. E. Singer, S. H. Wei and S. H. Hoa.—p. 341.
Studies on Lymphogranuloma Venereum Complement-Fixing Antigens: IV. Fractionation with Organic Solvents of Antigens of Psittacosis-Lymphogranuloma Venereum Group. M. R. Hilleman and Clara Nigg. —p. 349.
Inhibitory Effects of Certain Avian and Mammalian Antisera in Specific Complement-Fixation Systems. Christine E. Rice.—p. 365.
Therapy of Experimental Brucella Infection in Developing Chick Embryo. W. H. Hall and W. W. Spink.—p. 379.

## Journal of Infectious Diseases, Chicago

**83**:1-100 (July-Aug.) 1948. **Partial Index**

Streptococcal Hyaluronic Acid and Hyaluronidase. R. M. Pike.—p. 1.
Radioiron in Ducks and Canaries and Its Effects on Initial Malarial Infections. P. E. Thompson, D. A. McGinty and M. L. Wilson. —p. 23.
Oxidative Metabolism of Trypanosoma Lewisi in Phosphate-Saline Medium. J. W. Moulder.—p. 33.
Changes in Glucose Metabolism of Trypanosoma Lewisi During Course of Infection in Rat. J. W. Moulder.—p. 42.
Relationship Between Ascorbic Acid and Phagocytic Activity. W. J. Nungester and A. M. Ames.—p. 50.
Antigenic Relationship of Brucella and Vibrio Comma. N. B. McCullough, C. W. Eisele and Grace A. Beal.—p. 55.
Studies with Shigella Dysenteriae (Shiga). S. E. Branham and S. A. Carlin.—p. 60.
Relationship of Biologic Defense Mechanisms to Antiobiotic Activity of Penicillin. I. Modifying Influence of Penicillin on Pattern of Pneumococcic Infection and Immune Response in Protein-Depleted Rat. O. K. Skinsnes and R. L. Woolridge.—p. 78.
Bone Marrow and Its Leukocytic Response in Protein Deficiency. M. Asirvadham.—p. 87.

## Journal of Nutrition, Philadelphia

**36**:187-330 (Aug.) 1948. **Partial Index**

*Improving Nutritive Value of Flour: II. Further Studies on Effect of Supplementing Enriched Flour with B-Complex Vitamins and Some Observations on Use of 80 Per Cent Extraction Flour. Beulah D. Westerman and Frances Templeton.—p. 187.
Relation of Ascorbic Acid Metabolism in Rat to Diets High in Protein, Carbohydrate or Fat. L. T. Samuels.—p. 205.
Need for and Interrelationship of Folic Acid, Anti-Pernicious Anemia Liver Extract, and Biotin in the Pig. T. J. Cunha, R. W. Colby, L. K. Bustad and J. F. Bone.—p. 215.
Effect of Enzymatic Hydrolysis on Nutritive Value of Casein. B. F. Chow, J. B. Allison and J. White.—p. 231.
Brain Excitability in Pyridoxine-Deficient Rats. Virginia D. Davenport and H. W. Davenport.—p. 263.
Cataracts Due to Deficiencies of Phenylalanine and of Histidine in Rat. A Comparison with Other Types of Cataracts. W. K. Hall, L. L. Bowles, V. P. Sydenstricker and H. L. Schmidt Jr.—p. 277.
Vitamin Studies in Middle-Aged and Old Individuals: I. The Vitamin A, Total Carotene and Alpha + Beta Carotene Concentrations in Plasma. E. Kirk and Margaret Chieffi.—p. 315.

**Nutritive Value of Flour.**—Westerman and Templeton conducted experiments on albino rats to determine the effect on growth, maintenance, reproduction and length of life of the use of whole wheat, enriched flour, enriched flour supplemented with other B complex vitamins and 80 per cent extraction flour in the diets. It was found that the whole wheat and the enriched flour did not support normal growth and reproduction in the

rats when included in the diet as sources of the B complex vitamins, at either the 40 or 60 per cent level. The enriched flour in the diet at these levels promoted better growth than the whole wheat. The enriched flour supplemented further with the B vitamins supported better growth, maintenance, reproduction and length of life than the enriched flour alone. The addition of choline, pyridoxine and riboflavin to the enriched flour resulted in greater weight gains than the addition of choline and pyridoxine. When choline, pyridoxine and calcium pantothenate were added even better growth was obtained. The animals with additional riboflavin or calcium pantothenate in the diet lived long and showed fewer deficiency symptoms than those on the diet of enriched flour with only choline and pyridoxine added. Animals on diets with choline, pyridoxine, calcium pantothenate and riboflavin added to the enriched flour, and these vitamins plus thiamine, made excellent growth records. None of the animals on the test diets reproduced so well as those on the stock diets. When 80 per cent extraction flour was enriched at the same levels as patent flour it supported slightly better growth than the enriched patent flour.

## Kansas Medical Society. Journal, Topeka

**49**:321-360 (Aug.) 1948

Modern Surgery of Retinal Detachment. S. J. Meyer.—p. 321.
*Skin Cancer. G. M. Tice and C. M. White.—p. 324.
Prefrontal Lobotomy, Method of Treatment for Chronic Mental Illness. B. H. Hall and L. L. Bernstein.—p. 333.
Ruptured Ectopic Pregnancy Complicating Normal Intra-Uterine Pregnancy. J. Tiller.—p. 335.

**Skin Cancer.**—This report by Tice and White is based on a study of 358 cases of cancer treated at the University of Kansas Hospital from 1933 to 1945. The lesion was verified by biopsy. The chief etiologic factor of skin cancer seems to be chronic irritation such as contact with coal tar products, actinic rays, inclemencies of the weather and uncleanliness. That excessive exposure to actinic rays plays a part in the causation of skin cancer is proved by the higher incidence of skin cancer in the Southern states. In Fort Worth and Dallas 46 per cent of all cancer is primary in the skin; in Chicago 12.5 per cent is primary in the skin. The authors were impressed by the number of skin cancers in the blond men from the wheat fields of Kansas. There seems little doubt that actinic rays are an important factor. The 358 patients reviewed here had 363 skin cancers. Skin cancer may be cured by surgical methods, radium or roentgen rays, or by a combination of the three. A physician should use the method in which he is most proficient. The basal cell epithelioma showed a cure rate of 95.2 per cent and the squamous cell a cure rate of 79.7 per cent. The over-all cure rate was 90.5 per cent. The massive type of roentgen therapy not only is more effective than the fractionated type but also is more economical in time saved for both the patient and physician. Chronic radiation ulcer is the only significant complication of roentgen therapy. It occurred in 4.6 per cent of these cases and generally yielded easily to plastic repair.

## Minnesota Medicine, St. Paul

**31**:834-944 (Aug.) 1948

The New Look in Medicine. A. E. Cardle.—p. 857.
Practice of Medicine in Ramsey County. J. M. Culligan.—p. 862.
Brain Tumors in Children. L. A. French.—p. 867.
*Automatic Attentive Breathing in Angina Pectoris. A. Friedell.—p. 875.
*Early Ambulation: Clinical Results and Prerequisites. K. A. Meyer, D. D. Kozoll and N. Capos.—p. 882.

**Breathing in Angina Pectoris.**—Friedell relates that a patient told him of the relief he had obtained from a severe attack of angina pectoris when his attention was suddenly diverted to a bird singing on a treetop nearby. After that experience he found that he could abort an attack at will or shorten one by actively pretending that he was "listening to a bird sing on a treetop," providing he promptly stopped whatever he happened to be doing at the moment and turned his attention to his breathing, while he endeavored to keep himself at ease and relaxed. As he demonstrated it, his technic consisted in a slowed and protracted inhalation, with his chest expanding slowly during inhalation. His exhalation was slow also. The author encouraged this patient to continue this practice, although at first he did not comprehend its significance. Later, a search through the literature on respiration and an analysis of the physiologic factors involved in the act of "listening to a bird" convinced him that "attentive respiration" may be valuable exercise in some heart ailments. The author presents observations on 11 patients. After his patients mastered attentive breathing, it gradually became automatic with them, and they would automatically turn to those exercises at the first approach of any sign of distress. His only control was to keep each patient under observation for at least four weeks or more, on medication, rest and sedatives, before teaching the automatic attentive breathing exercises.

**Early Ambulation.**—Meyer and his associates studied, in relation to early or late ambulation, the postoperative complications of 500 surgical patients after the performance of one of five standard surgical procedures: gastric resection, colon resection, cholecystectomy, hysterectomy and herniorrhaphy. There was a total of 98 complications among 500 patients; 28 of the complications occurred among the 250 patients who became ambulatory early and 70 among the 250 who became ambulatory late. There was a total of 13 deaths (included in the 98 complications), of which all but 1 occurred in the group with prolonged bed rest. Pneumonia not only occurred more frequently in the late risers but also was more often fatal. Postoperative wound infections, thrombophlebitis and distention showed a definite decline with early ambulation, whereas pulmonary atelectasis and cystitis did not. A significantly shortened period of hospitalization was seen for each of the procedures when followed by early ambulation. Discussing the surgical prerequisites for early ambulation, the authors point out that transverse incisions are to be preferred to vertical incisions in patients in whom early ambulation is contemplated. The reason for this is that the transverse incision has a lower incidence of evisceration, nerve destruction and herniation. The use of interrupted sutures is also important in the program of early ambulation, since the lines of tension are more equally distributed. The use of interrupted sutures is of more importance than the type of suture used. It is also advisable to inform patients before operation that they are to become ambulatory early. The use of spinal anesthesia is preferable, because it makes the patient more cooperative. Contraindications to early ambulation include shock, hemorrhage, generalized peritonitis, intestinal obstruction, wound evisceration or extensive wound infection, toxic states, cardiovascular complications, extreme debility and severe anemia.

## New England Journal of Medicine, Boston

**239**:283-316 (Aug. 19) 1948

Country Doctor on the Maine Coast. M. E. Chase.—p. 283.
*Serum Concentrations of Penicillin Following Administration of Crystalline Procaine Penicillin G in Oil. W. L. Hewitt, P. Whittlesey and C. S. Keefer.—p. 286.
Paroxysmal Hypertension in Spinal-Cord Injuries. C. E. Thompson and A. C. Witham.—p. 291.
Public Health Today and Tomorrow in Massachusetts. V. A. Getting.—p. 295.
Chemotherapy of Neoplastic Disease: III. Agents of Clinical Value. D. A. Karnofsky.—p. 299.
Carcinoma of Stomach, with Peritoneal Metastases: Small Bowel Obstruction.—p. 306.
Subacute Glomerulonephritis: Pulmonary Edema, with Massive Hemorrhage into Lungs.—p. 308.

**Serum Concentration of Penicillin.**—Hewitt and his co-workers present pharmacologic data concerning the use in man of crystalline procaine penicillin G suspended in oil. The following single intramuscular injections were employed: 1 cc. of procaine penicillin G in oil (300,000 units per cubic centimeter) and 2 cc. of procaine penicillin G in oil (300,000 units per cubic centimeter). Persons without evidence of impaired cardiac renal or hepatic function served as subject of the tests. The majority were women who had passed through labor or young men who recovered from acute illness. In a number of cases the preparations were employed in the treatment of various acute illnesses as the definitive form of therapy. It was found that the maximum serum penicillin concentrations obtained with procaine penicillin G in oil were distinctly lower than those following a similar dose of sodium penicillin G in peanut

oil and beeswax. The concentrations following administration of the former preparation, particularly with a dose of 600,000 units, showed considerably more uniformity throughout the twenty-four hours following injection. A comparison of the serum penicillin concentrations obtained after a dose of 300,000 and 600,000 units of procaine penicillin G revealed the most characteristic difference to be a prolongation of a given effective penicillin level rather than an increase in the magnitude of the penicillin concentration during the early period after administration. Crystalline procaine penicillin G in oil was superior to crystalline sodium penicillin G in peanut oil and beeswax for maintaining an effective serum penicillin concentration for twenty-four hours after injection.

## New Orleans Medical and Surgical Journal

**101**:47-96 (Aug.) 1948

Postrabies Vaccine Paralysis. S. Halle.—p. 47.
Necessary Personal Oral Hygiene for Prevention of Caries and Periodontoclasia. C. C. Bass.—p. 52.
Diagnosis of Tuberculosis. H. L. Mantz.—p. 70.
Penicillin in Treatment of Peptic Ulcers by Continuous Gastric Drip. R. W. Young.—p. 75.
Some Data Pertinent to Diagnosis and Prognosis of Pulmonary Tuberculosis. P. B. Johnson and L. A. Monte.—p. 77.
Dermatomyositis: Report of Case. W. H. Browning.—p. 80.
Sympathetic Ophthalmia: Report of Case. W. W. Hart.—p. 85.

## Puerto Rico J. Pub. Health & Trop. Med., San Juan

**23**:309-468 (March) 1948

Anthiomaline and Neostibosan in Treatment of Filariasis (Dirofilaria Immitis). Sophie C. Trent.—p. 311.
Studies on Murine Typhus in Puerto Rico. A. P. Lebrón.—p. 393.
Contamination by Air-borne Amoebae in Bacteriophage Typing. O. B. Soto.—p. 422.
Note on Bacteriologic Examination of Stomach Contents in Puerto Rico. F. H. Morales and Josefina Baralt.—p. 444.
Digestibility of Some Tropical Oils. C. F. Asenjo, J. A. Goyco and Ana R. F. de Guzmán.—p. 458.

## Surgery, St. Louis

**24**:161-444 (Aug.) 1948. **Partial Index**

Postwar Trends in Training of General Surgeon. R. M. Zollinger.—p. 161.
Anal Ileostomy with Sphincter Preservation in Patients Requiring Total Colectomy for Benign Conditions. M. M. Ravitch.—p. 170.
*Polyposis (Adenomatosis) of Colon. P. I. Hoxworth and D. P. Slaughter.—p. 188.
Resection of Rectum and Rectosigmoid with Preservation of Sphincter for Benign Spastic Lesions Producing Megacolon: Experimental Study. O. Swenson and A. H. Bill Jr.—p. 212.
Role of Hypertrophy of Muscularis in Delayed Onset of Symptoms in Cancer of Colon. J. A. Gius.—p. 221.
*Indication for Emergency Operation in Severe Hemorrhage from Gastric or Duodenal Ulcer. J. E. Dunphy and S. O. Hoerr.—p. 231.
*Massive Hemorrhage from Gastroduodenal Ulcer. J. D. Stewart, A. J. Massover, W. H. Potter and S. M. Schaer.—p. 239.
Use of Roux Y in Extending Operability of Carcinoma of Stomach and of Lower End of Esophagus. J. T. Reynolds and J. P. Young.—p. 246.
Intrahepatic Cholangiojejunostomy with Partial Hepatectomy for Biliary Obstruction. W. P. Longmire Jr. and M. C. Sanford.—p. 264.
New Method for Surgical Treatment of Large Omphaloceles. R. E. Gross.—p. 277.
Hernia Problem, with Reference to Modification of McVay Technic. J. M. Farris, J. Ettinger and J. A. Weinberg.—p. 293.
Sympathetic Denervation of Extremities; Operative Technic, Morbidity and Mortality. H. B. Shumacker Jr.—p. 304.
Early Effect of Lumbodorsal Sympathectomy on Response to Insulin in Man. F. A. Simeone and H. Vavoudes.—p. 326.
Combined Cervical and Thoracic Approach for Resection of Large Arteriovenous Aneurysm. H. Wilson and D. Carr.—p. 342.
Practical Application of Heparin-Caronamide Reaction to Potentiation of Heparin in Gelatin Menstruum. R. S. McCleery, C. P. Artez and H. D. Sirak.—p. 348.
Experiences in Surgical Treatment of Pulmonary Stenosis. J. R. Paine and R. L. Varco.—p. 355.
Pulmonary Decortication in Treatment of Early Pyogenic Empyema. E. F. Parker and T. H. Burford.—p. 371.
Inhalation of Micropowdered Penicillin and Streptomycin in Prevention of Postoperative Pulmonary Infection. S. H. Cohen, G. V. Taplin and E. B. Mahoney.—p. 392.
Significance of Hemoptysis in Carcinoma of Thyroid Gland: Report of Four Cases. O. F. Grimes and H. G. Bell.—p. 401.

**Polyposis of Colon.**—Hoxworth and Slaughter point out that whereas polyps of the colon which occur singly or in small numbers are common, polyposis (adenomatosis) is relatively rare. The condition is of particular interest because of its familial and congenital aspects, the diffuse involvement of the colon and the tendency to malignant change at an early age. Seven new cases of polyposis are described, which bring to 35 the total reported in the American literature since 1930, in which attempts at surgical cure had progressed to the point of removal of portions of the large bowel. The only two methods resulting in cure were total ablation of the large bowel and external ileostomy, or total colectomy and ileosigmoidostomy (or ileoproctostomy) combined with fulguration of the lower segment. Total removal of the large bowel is the method of choice if there is evidence of carcinoma of the rectum or lower part of the sigmoid colon. Total removal might also be preferred if the rectum exhibits closely set polyps with hyperplasia, ulceration and secondary infection. The method which combines fulguration with surgical treatment was employed with considerable success in 17 of the 35 summarized cases. This method has been ruled out. The presence of cancer in nearly half of the cases indicates the close observation which must be accorded this segment if it is allowed to remain. The authors stress that early recognition of the disease and the increased amount of surgery that can be performed in one stage because of modern therapeutic adjuncts to intestinal surgery combine to give an improved prognosis in polyposis of the colon.

**Emergency Operation in Hemorrhage from Peptic Ulcers.**—Dunphy and Hoerr show that the availability of large quantities of blood for emergencies has influenced the treatment of severe hemorrhage of the upper part of the gastrointestinal tract and makes it desirable to reevaluate the place of emergency operation for this condition. The poor results of emergency surgery in the past, contrasted with the supposedly good results of nonsurgical management, have led to the belief that such cases are medical. The crux of the matter lies in the accuracy of the selection of patients for operation. The authors believe that the rate of bleeding is the decisive factor. If a stable circulation cannot be maintained with transfusions of 1,500 cc. of blood per twenty-four hours, spontaneous cessation of the hemorrhage is unlikely and emergency operation should be undertaken. Some patients with an exsanguinating hemorrhage are admitted in profound shock and respond slowly to transfusion, tending to revert into shock. If a patient is in shock on arrival at the hospital, or shows evidence of it while under treatment, he deserves the constant vigilance of a bedside team of internist and surgeon. If the hemorrhage does not seem to be controlled with blood transfusions of approximately 500 cc. every eight hours, an emergency operation is to be considered.

**Massive Hemorrhage from Gastroduodenal Ulcer.**—Stewart and his co-workers believe that the advantages of early surgical treatment of bleeding peptic ulcer deserve more serious consideration than in the past. Accordingly, since January 1947 an effort was made on their surgical service to evaluate a plan of management of acutely bleeding gastric and duodenal ulcers involving immediate blood replacement and early subtotal gastric resection. The study is still in progress. By early surgical treatment is meant gastric resection with removal of at least 80 per cent of the stomach within twenty-four hours of admission to the hospital. The only patients with acute massive hemorrhage into the upper part of the gastrointestinal tract not operated on are those refusing operation, those presenting evidence of primary blood disease with clotting defect or those with evidence of cirrhosis of the liver with esophageal varices. In case of doubt as to the source of bleeding, exploratory laparotomy is performed. Determination of blood volume and extracellular fluid volume is done within one-half hour after the patient is admitted to the hospital, and massive blood transfusion is started immediately afterward. Operation is carried out during the course of blood replacement. Thirty patients have been studied under the program just outlined. In 19 instances operation was performed, and in 11 instances nonoperative management was carried out, as the patients either refused operation or died of hemorrhage before operation could be started. In 2 of the 19 patients operated on other lesions were found, in one instance esophageal varices and in the other carcinomatous ulcer at the cardiac end of the stomach.

Only exploratory laparotomy was performed in these, and both patients made uneventful convalescence from the operation. The experiences to date suggest that the surgical treatment affords a better prognosis than nonsurgical management.

## Virginia Medical Monthly, Richmond

**75**:379-434 (Aug.) 1948

*Role of Ammonium Chloride and Other Acid Producing Substances in Treatment of Congestive Heart Failure. A. J. Crutchfield Jr. and J. E. Wood Jr.—p. 381.
Tic Douloureux: Review of 200 Cases Treated by Surgery. C. C. Coleman, J. M. Meredith and C. E. Troland.—p. 386.
*Streptomycin in Treatment of Draining Tuberculous Sinuses. W. L. Nalls and R. E. Moyer.—p. 389.
Clinical Significance of RH Factor. W. C. Winn.—p. 393.
Hemolytic Anemia in Newborn. E. L. Kendig Jr.—p. 395.
*Sulfadiazine in Treatment of Meningococcic Meningitis: Study of Sixty Cases Without Death. S. G. Page Jr. and M. Jane Page. —p. 397.
Practical Application of Unipolar Leads in Clinical Electrocardiography. R. R. Porter and N. Bloom.—p. 403.
Protruded Cervical Intervertebral Disk Simulating Heart Disease. C. L. Gossels.—p. 408.
Treatment of Bronchial Asthma. K. D. Graves.—p. 411.
Nutritional Management of Nephrotic Syndrome. H. Y. Spence and L. E. Sutton.—p. 413.
Physical Medicine in General Practice. W. E. Malin.—p. 416.
Nail Changes Following Application of Nail Preparation. A. Pepple and R. W. Fowlkes.—p. 418.
Basal Cell Epithelioma: Some Valuable Pointers Gained in Successful Treatment of 300 Cases by X-ray Radiation. G. H. Carr Sr.—p. 420.
Diabetes Insipidus. A. B. Grubb.—p. 422.

**Acid-Producing Substances in Congestive Heart Failure.**—According to Crutchfield and Wood, intermittent administration of acid-producing substances seems to be theoretically and practically more effective for inducing diuresis than their continuous administration. Apparent synergism between these substances and mercury or xanthine diuretics may be related to the combination of two influences, both acting primarily to increase renal sodium elimination. One must pay proper regard to the relative state of cardiac competency, to renal function, hepatic function when ammonium salts are to be used, and the state of extracellulary fluid and its electrolyte content before using acid-producing substances. The usual dosage is 8 to 12 Gm. of ammonium chloride in divided doses daily, four days out of each week. This provides 5.3 to 7.9 Gm. of chloride ion. The normal kidney can produce ammonia sufficient to cover 16 Gm. of chloride daily. This dosage combined with a basic ash diet containing more fruits and vegetables serves to provide a surplus of acid irons to the patients without any appreciable danger of uncompensated acidosis. A basic ash diet seems more rational than an acid ash diet in the treatment of congestive heart failure, since the latter diet is usually of higher sodium content. Nausea and vomiting and skeletal decalcification do not constitute major problems in the use of acid-producing substances.

**Streptomycin in Draining Tuberculous Sinuses.**—Nalls and Moyer used streptomycin in treating 42 patients who had draining tuberculous sinuses. Twenty-three patients, 19 Negro and 4 white, under the old regimen were given 1.8 Gm. of the drug intramuscularly daily in six fractional doses of 0.3 Gm. Nineteen patients, 11 white and 8 Negro, received 0.2 Gm. intramuscularly every four hours for five doses, or a total daily dose of 1.0 Gm. In 15 of the first group, the draining sinuses originated in bone or cartilage; 3 were from tuberculous glands and 2 developed after removal of a tuberculous epididymis. In 7 of the second group the sinuses originated about the rectum; 6 were from bone or cartilage; 4 followed epididymectomy, and 2 were in the chest wall following thoracoplasty. Twenty-one of the 23 patients under the old regimen have had complete closure of all their sinuses, and the sinuses have remained closed for a follow-up period of seven to twelve months following termination of treatment. Eleven of the 19 patients under treatment with the new regimen had complete closure of all their sinuses and in 8 the sinuses are rapidly closing. With the reduced dosage under the new regimen, the same results are being attained with a decided reduction or complete absence of the toxicity noted under the old regimen. Under the reduced dosage resistance of the tubercle bacilli to streptomycin does not develop as often or as quickly as under the old regimen. Under the reduced dosage, treatment given twice daily, which secures a higher streptomycin blood level peak, produces less resistance than the more frequent treatment of five injections daily with a smaller streptomycin blood level peak. The treatment routine advised at present is 1 Gm. daily, 0.5 Gm. twice daily, twelve hours apart, intramuscularly, and duration of treatment for thirty days after healing has taken place or for a total of one hundred and twenty days, whichever is shorter.

**Sulfadiazine in Meningococcic Meningitis.**—The Pages used sulfadiazine in treatment of 60 consecutive patients, 43 white and 17 Negro, 59 men and 1 woman with an average age of 26 years, who had meningitis and were admitted to a station hospital between December 1942 and June 1945. It was the sole specific drug used in 52 cases, while it was used in combination with antimeningococcus serum in 3 cases, with penicillin in 5 cases and with sulfanilamide, antimeningococcus serum and penicillin in 1 case. The patients received an average total dose of 7.75 Gm. of sulfadiazine intravenously and 49.3 Gm. orally for an average of 10.2 days of treatment. One thousand cubic centimeters of sodium lactate was administered intravenously, followed immediately by 5 Gm. of sodium sulfadiazine in 100 cc. of distilled water without removal of the needle. These two medications may be repeated in eight hours if the patient is unable to retain oral medication. When the patient is able to retain oral medication, 16 Gm. of sodium bicarbonate per day in divided doses of 4 Gm. each may be given in lieu of the intravenous administration of lactate and should be continued for at least forty-eight hours after discontinuance of the sulfadiazine. Forty-eight cases of meningitis were proved to be meningococcic by laboratory methods, while 12 were considered to be "clinical" with headache, nuchal rigidity, vomiting, fever and pleocytosis of the spinal fluid. Five cases were considered mild, 28 of moderate severity, while 27 were severe. All the patients recovered. Alkalinization of the urine prevents renal complications. Meningococcemia should be suspected in a patient with arthralgia and fever. Sulfadiazine is considered the drug of choice in the treatment of uncomplicated meningococcic meningitis.

## Wisconsin Medical Journal, Madison

**47**:746-836 (Aug.) 1948

*Reconstruction of New Thumb by Tubular Pedicle and Bone Cartilage Graft. C. A. Hardin.—p. 763.
Stevens-Johnson Syndrome: Report of Case with 2 Major and 4 Minor Recurrences. S. W. Rosenberg.—p. 766.
Treatment of Infantile Paralysis During Acute Stage. P. Lewin. —p. 769.
Headaches and Head and Face Pains. W. J. Frawley.—p. 773.
Acute Obstructive Cholecystitis. P. C. Kiernan.—p. 776.

**Reconstruction of a New Thumb.**—Hardin reviews the case of a man, aged 35, who had lost a thumb three years previously. A small viable well healed stump was present. A surgical reconstructive procedure was started. A pedicle graft was raised on the right abdominal wall. A modification from the routine method of inserting bony and cartilaginous graft was employed. The stump of the right thumb was opened with a dorsal triangular incision, leaving the normal palmar contour present at the base of the first metacarpal. The proximal fragment of metacarpal was hollowed out. The drilling was done at a forward angle to give the proper position to the newly fashioned thumb. A portion of rib and curved costal cartilage was removed. The bony portion of the rib was fitted into the hollowed socket of the first metacarpal. The lateral portion of the pedicle was now detached and the free end of the pedicle was hollowed out to receive the graft. The medial portion of the pedicle remained attached for blood supply. Later the pedicle was detached medially, and the distal end of the newly fashioned thumb was closed. Complete healing of thumb had taken place three weeks after the attachment of the pedicle to the hand. The patient is able to touch the midportion of the little finger. Sensation is gradually returning to the new thumb. Rotation, abduction and adduction are present in a useful range of motion.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

### British Journal of Dermatology and Syphilis, London

**60**:235-274 (July-Aug.) 1948

Detection of Primary Cases of Syphilis Without Clinical Symptoms by Serologic Tests Only. J. Desneux.—p. 235.
Attempt to Investigate Fungus Cultures in Hanging Drop: Preliminary Report. A. A. Zimerinov and S. M. Rafalovich.—p. 238.
Tuberculoid Leprosy: Warty Lepride. O. G. Costa and H. B. Aleixo. —p. 243.
Lichen Planus of Alimentary Canal and Tympanic Membranes. R. P. Warin, P. Hall-Smith and F. O'N. Daunt.—p. 249.

### British Medical Journal, London

**2**:237-280 (July 31) 1948

*Continued Hypertension: Prognosis for Surgically Treated Patients. R. H. Smithwick.—p. 237.
The Sphenoid Sinus. A. W. Proetz.—p. 243.
Surgical Anatomy of Parotid Gland. H. Bailey.—p. 245.
*Acute Uremia. S. G. Zondek.—p. 248.
*Fibrositis. J. Cyriax.—p. 251.

**Prognosis After Surgical Treatment of Hypertension.**—Smithwick reports on 263 patients with essential or malignant hypertension treated surgically from 1938 to 1943. A thorough denervation of the splanchnic bed was performed in two stages spaced eight to ten days apart, the lumbodorsal (thoracolumbar) technic (Smithwick 1940) being used. The purpose of this communication is to discuss the present status of these patients, all of whom were operated on at least five and at most nine and a half years ago. This report deals with 256 patients, of whom all had reached the stage of continued hypertension and 99 per cent had cardiovascular disease, which was serious in about 80 per cent of the group. Most of them had failed to respond to other therapeutic measures. Male patients comprised 39.4 per cent and female patients 60.6 per cent of the series. The total mortality during the five to nine year period of observation was 31.2 per cent. The mortality among males was 34.3 per cent and for females 29.1 per cent. Survival curves following surgical treatment are compared with those of Keith, Wagener and Barker. The survival rate was higher in all groups in the surgically treated series. The status of the electrocardiograms in a group of surgically treated patients is compared with that of a control series reported by Canabal, Warneford-Thomson and White. The difference observed was also found to be significant statistically. With regard to symptoms, over 90 per cent of the patients who have so far been interviewed five to nine years after operation are improved in this respect. The effect of operation on the cardiovascular system has been indicated by comparing the changes in various vascular areas before with those noted five to nine years after operation with particular reference to eyegrounds, electrocardiograms, renal function and the vascular system as a whole. Of 120 patients in whom the retinal area was examined 40.7 per cent showed improvement, 39.2 per cent showed no change and 20 per cent were worse. For 125 electrocardiographically examined patients the corresponding figures were 42.3 per cent, 48.8 per cent and 8.9 per cent. For 114 patients in whom the renal vascular region was examined the figures were 28.9 per cent, 61.3 per cent and 9.8 per cent and for 100 patients in whom all vascular areas including the cerebral were considered the figures were 51, 12 and 37 per cent. Further comparison of surgically and nonsurgically treated patients is desirable, but experience so far suggests that surgical treatment has favorably altered the prognosis for many patients with continued hypertension and cardiovascular disease.

**Acute Uremia.**—Zondek points out that extrarenal uremia or "prerenal uremia" according to Fishberg and "renal anoxia" according to Maegraith and associates is probably the most frequent form of acute uremia. Extrarenal uremia is a nonspecific body reaction—i. e., a pathologic process met with in different diseases. The uremia in question is called "extrarenal" because it occurs in disease not primarily involving the kidneys. The renal failure in these cases seems to be of a functional nature; another and essential characteristic is its association with extrarenal azotemia, a process caused by increased endogenous breakdown of protein which can be diagnosed by symptoms such as an increase of nonprotein nitrogen in the blood in addition to a dissociation of the urea-sodium chloride excretion. Since burns, crushing, surgical shock, hepatic disorders and myocardial infection may cause extrarenal azotemia plus renal failure—that is, extrarenal uremia—the author suggests that primary renal disease may also cause this complex of symptoms. He presents a case which seems to prove this assumption. One of the 2 other cases reviewed is of extrarenal azotemia caused by general infection in a patient with chronic nephritis. The extrarenal azotemia and the chronic nephritis existed separately and did not interfere with each other. The third case is one of severe acute cholecystitis complicated by acute uremia. The urinary excretion, at least in the first three days, of only small amounts of urea in spite of a high urea level in the blood suggests that the renal insufficiency must have been rather severe. But a process of extrarenal azotemia, too, must be assumed. This, however, was not recognizable until, from the third day onward, the daily urinary excretion of urea rose (to 37 to 70 Gm.) while the urinary excretion of sodium chloride still remained low; the sodium chloride–urea ratio was up to 1:10. The author stresses that acute uremia occurring in cases of chronic renal disease may be of the type of extrarenal uremia. Extrarenal uremia represents the pattern for most of the cases of acute uremia. The term "extrarenal uremia" may be replaced by "acute nonspecific uremia."

**Fibrositis.**—Cyriax is in agreement with the practice of dividing fibrositis into a primary and a secondary form, but he is convinced that primary fibrositis is an imaginary disease, whereas the secondary form is a real entity. He concedes that with regard to primary fibrositis authoritative opinions have been backed by pathologic changes in excised tissues; he does not deny the occurrence of such changes but only their bearing on symptoms. The following preconceptions should be discarded: that muscle spasm denotes a disorder of muscle, that muscles in spasm are tender, that tenderness of muscle indicates a muscle lesion, that nodules or crepitus at a muscle are significant, that limitation of movement in more than one direction can result from a muscle lesion alone and that examination of conduction along a nerve suffices. The author further considers the physical signs and the subsequent history in patients hitherto regarded as suffering from rheumatic fibrositis. He discusses acute rheumatic torticollis, vertebroscapular fibrositis, brachial neuritis, pleurodynia, acute lumbar fibrositis (lumbago), chronic lumbar fibrositis (backache), gluteal and sacroiliac fibrositis, sciatica and anterior crural neuritis. The underlying principle of the treatment of primary fibrositis is to secure reduction of the intra-articular displacement causing the symptoms. The author shows that there is no controversy about the existence of four categories of secondary fibrositis. Under the heading of traumatic fibrositis he mentions tennis and golf elbow. The other three forms of secondary fibrositis are rheumatoid fibrositis, infectious fibrositis and parasitic fibrositis.

### Guy's Hospital Reports, London

**96**:141-257 (Nos. 3 and 4) 1947. **Partial Index**

Studies in Lung Abscess; Part V. Etiology of Lung Abscess. R. C. Brock.—p. 141.
Formation of Substantives from Greek in the Medical Vocabulary. H. S. H. Vertue.—p. 169.
Dysphagia Lusoria: Right-Sided Aortic Arch. W. N. Mann.—p. 186.
Heart Disease and Pregnancy. Study of 100 Pregnancies. P. R. C. Evans.—p. 194.
*Chronic Relapsing Pancreatitis: Some Notes on Its Pathology, Diagnosis and Treatment. R. E. Horton.—p. 226.

**Chronic Relapsing Pancreatitis.**—According to Horton there is a gradation of severity from the familiar acute pancreatitis to a less often recognized subacute pancreatitis, which is characteristically a relapsing disease. The clinical picture may be difficult to recognize and in typical cases closely resembles recurrent cholecystitis with gallstones. If the biliary investigation is negative a diagnosis of relapsing pancreatitis is possible and may be confirmed by estimating the serum diastase during an attack. Of 7 cases of relapsing pancreatitis which have been recorded in 1 the patient died in a more acute attack; 4 others were treated by cholecystenterostomy. One of these died after operation. The other 3 have been relieved, 2 completely and 1 incompletely. Two other patients remain under

observation. During the acute attacks treatment should be conservative with bed rest, and morphine to relieve pain. The indications for operation would appear to be the relief of severe and recurrent pain and the prevention of a more acute and fulminating attack from which the patient might die. A fulminating attack can be prevented with certainty only by pancreatectomy, but this is an uncommon complication and does not warrant such a severe operation. Thoracolumbar sympathectomy, splanchnic block and external or internal biliary drainage are other interventions that have been suggested. The author believes that internal biliary drainage has a fair chance of curing the symptoms. Should this be unsuccessful thoracolumbar sympathectomy may be performed. Pancreatectomy, with its higher mortality rate and the disadvantage of making the patient diabetic, should be reserved for patients with severe pain, such as may be associated with pancreatic lithiasis, and which is unrelieved by other operative measures.

## Lancet, London

**2**:169-204 (July 31) 1948

*Latent Tetany Caused by BAL (2: 3 Dimercaptopropanol). B. Russell, B. Green and L. G. R. Wand.—p. 169.
*Treatment of Tuberculosis with Sulphetrone. D. G. Madigan.—p. 174.
Chemotherapy of Tuberculosis with Sulphetrone. Mary G. Clay and A. C. Clay.—p. 180.
Radical Cure of Inguinal Hernia with Plastic Insert. W. Thompson. —p. 182.
Handkerchiefs in Transfer of Respiratory Infection. K. R. Dumbell, J. E. Lovelock and E. J. Lowbury.—p. 183.

**Latent Tetany Caused by BAL.**—The occurrence of cramp-like pains in the limbs and spasms of the fingers in a patient undergoing treatment with BAL (2: 3 dimercaptopropanol) suggested to Russell and his associates that a state of latent tetany might be present, and the detection of Chvostek's sign on both sides confirmed this suspicion. The absence of alkalosis made it probable that the tetany was of low calcium or low magnesium type. A study of potassium, sodium, calcium, magnesium and inorganic phosphate levels in the serum in this and other patients and volunteer students was made after intramuscular injections of BAL. Studies of 13 patients and volunteers receiving doses of BAL between 0.75 and 6.11 mg. per kilogram of body weight revealed, besides toxic symptoms, a positive Chvostek sign in 7, of whom 1 also had a positive Trousseau sign. Of the remainder, 5 had cramps and other toxic symptoms, and 1 was free from symptoms. Serum studies suggest that the tetany may be of low magnesium and possibly also of low calcium type, because these kations either were rendered unavailable to the cells or were removed attached to BAL. All the symptoms of toxicity from BAL are capable of explanation as latent tetany. Calcium balance and magnesium balance studies are necessary to explain the metabolic disturbances. In doses of 3.4 mg. per kilogram of body weight daily for four days BAL gives great relief to sufferers from arsenic, gold and mercury intoxications, and the danger of a temporary unavailability of pericellular calcium and magnesium can be ignored if the patient is provided with a high calcium diet, magnesium sulfate and vitamin D. The serum sodium and serum potassium levels were not appreciably affected by the injection of BAL.

**"Sulphetrone" in Tuberculosis.**—Madigan says that in 1943 a clinical trial with "sulphetrone" (4,4'-bis [gamma-phenyl-N-propylamino] diphenylsulfone-tetrasodium sulfonate) was organized at the County Hospital of Farnborough, Kent. The choice of clinical material was dictated solely by its presentation within the hospital; thus it represents a statistically unselected population drawn on for five years. Pulmonary cases predominated, but all types of tuberculosis were included. A total of 70 cases were treated. Whether "sulphetrone" is given parenterally or by mouth, a gradual increase of dosage is necessary to build up therapeutic levels in the blood of 7.5 to 10 mg. per hundred cubic centimeters if toxic symptoms are to be avoided. It is also essential to give iron and brewers' yeast to avoid hypochromic and nutritional anemia. Even so a residual hemolytic anemia will arise, leading to a fall in hemoglobin concentration though not to below 60 per cent (Haldane). To avoid major toxic emergencies, seen when blood "sulphetrone" levels above 12.5 mg. per hundred cubic centimeters are allowed to persist, a scheme of management is suggested. No beneficial effect was detected from "sulphetrone" therapy of acute infections—e. g., acute miliary tuberculosis and tuberculous meningitis—but a patient with chronic miliary tuberculosis recovered. Improvement was observed in chronic lesions. Thus 12 out of 17 cases of acute pulmonary fibrocaseous disease and 13 of 22 cases of chronic disease improved. All of 4 cases of primary pulmonary tuberculosis, and 6 of 8 of strictly exudative lesions, improved. In the chronic hematogenous group all of 4 cases improved, and in productive pulmonary infiltrative group 3 out of 4 improved. In general, all exudative phases of infiltrative disease were halted and reversed by "sulphetrone." The need for long-continued courses is emphasized, units of observation being three months, and routine laboratory control is essential.

## Medical Journal of Australia, Sydney

**2**:57-84 (July 17) 1948

Intracranial Disorders of New-Born Associated with Birth. Kate Campbell.—p. 57.
Epidemic of Gastro-Enteritis in Infants, with Special Reference to Treatment. G. Stable and I. G. Philpott.—p. 63.
*Some Aspects in Management of Case of Jaundice. M. E. Chinner. —p. 69.

**Management of Jaundice.**—Chinner discusses various functional problems and reports a case to illustrate the procedure necessary to separate obstructive from parenchymatous jaundice. He considers the constant presence of urobilinogen and the failure to respond to vitamin K as valuable tests. A serum colloidal gold test should be performed. This will produce a strongly positive result in hepatogenous jaundice and a negative result in obstructive jaundice. A serum phosphatase test is also useful; this will produce a reading of over 30 units in the obstructive type of jaundice and of less than 30 units in the hepatogenous type. The most valuable tests for differentiating obstructive and hepatocellular jaundice are (1) the urinary urobilinogen test, (2) the serum colloidal gold test, (3) the serum alkaline phosphatase test and (4) the response of the plasma prothrombin time to vitamin K. Liver biopsy is valuable, but requires experience and must not be done if the prothrombin time is abnormal. The first requirement in the treatment of the jaundiced patient who has hepatitis is rest, and this must be maintained until the patient has completely recovered. In the acute stages this is not difficult, as the patient frequently feels ill, but in the more chronic forms of hepatitis it is easily proved that exercise will bring about a swelling of the liver and exacerbation of symptoms. When the patient is walking about avoidance of fatigue is essential. In the acute stage the patient will take only fluids with a high carbohydrate content; if the vomiting is severe, then dextrose must be given by the intravenous drip method. As the hepatitis becomes subacute, a high calory diet becomes necessary. In the past it has been thought that diets poor in or free from fat were a necessity; but recent opinion holds that such diets are undesirable, as they are poor in calories and unpalatable. Recently the author has been using gradually increasing amounts of fat. The author also gives vitamins of the B group, crude liver injections and dried brewer's yeast.

## Acta Chirurgica Scandinavica, Stockholm

**96**:485-582 (June 28) 1948. **Partial Index**

Radical Extirpation and Primary Closure of Deep Thoracic Fistulas. J. L. Hansen.—p. 485.
Drawbacks Encountered in Local Treatment of Pleural Empyema with Chemotherapeutic and Antibiotic Agents. J. L. Hansen.—p. 509.
*Penicillin Treatment of Acute Hematogenous Osteomyelitis. E. E. Vuori and M. Sulamaa.—p. 547.
Intestinal Suction Treatment with Miller-Abbott Tube. S. S. Krock. —p. 562.

**Penicillin in Hematogenous Osteomyelitis.**—The material reviewed by Vuori and Sulamaa was collected from several hospitals. It comprises 83 cases in which 92 bones were involved. Ten patients were adults and the remainder children below 17 years. The infecting organism was determined in 60 patients; in 2 streptococci were found; in 1 both streptococci and staphylococci; in 1 Staphylococcus albus and in the remainder Staphylococcus aureus. The treatment varied considerably in the different hospitals. Treatment with penicillin was often commenced rather late. One patient died probably because of

insufficient dosage of penicillin. In the majority of cases the effect of penicillin on the general infection at the initial stage was good. The disease became chronic in spite of the treatment with penicillin in 42 cases, and did not heal until sequestrectomy or radical trepanation had been performed. The treatment with penicillin gave better results in the cases of primarily chronic disease than in those of acute disease; it was more effective in the cases which showed principally osteoplastic roentgenologic bone changes than in those showing principally osteolytic changes. No significant correlation could be proved between the recovery and the intensity of the treatment with penicillin and the time of its commencement. The fact that the group of cases in which treatment with penicillin was given within the first week of illness contained a significantly larger number of cases of the osteoplastic type than the group which came under treatment later indicated that it is important to aim at early treatment. Patients treated with smaller doses had a lower frequency of complications.

## Acta Neurologica et Psychiatrica Belgica, Brussels

**48**:281-338 (July) 1948

Answer to Report by Professor Van Gehuchten on Hemolytic Serum Therapy in Multiple Sclerosis. M. Laignel-Lavastine and N. T. Koressios.—p. 281.
*Contribution to Study of Deficiency of Intelligence in Patients with Parkinsonism as Sequela of Lethargic Encephalitis. R. Nyssen and M. Wens.—p. 287.
Systematized Nervous Diseases and Problems of Heredity. L. van Bogaert. —p. 308.

**Deficiency of Intelligence in Patients with Parkinsonism.**—Nyssen and Wens studied the intelligence of 69 adults, 50 men and 19 women, with postencephalitic parkinsonism by submitting them to four different tests. Each test consisted of eight problems which had been given previously to 175 normal adults, working men and women and housewives. A deficiency of intelligence was demonstrated by these tests in the majority of the patients. Each of the normal controls as well as each of the patients was tested individually. The degree of difficulty in solving every single problem was established statistically in the controls. These statistical norms made it possible to compare the average of the results obtained in the patients with that of the results obtained in the controls; these norms also warranted an approximate estimate of the incidence and of the degree of the decrease in intelligence of the patients with parkinsonism. By these methods of examination it has been ascertained that the majority of patients with postencephalic parkinsonism present a certain degree of deficiency of their intellectual capacity in its strict sense, a deficiency which may reach the level of manifest oligophrenia. By various grouping procedures it has been possible to observe that the age of the patient at the time of the tests and at the time of the acute infection or the duration of Parkinson's syndrome and the coexistence of psychopathic or psychotic disorders hardly correlate with the degree of deficiency of intelligence. In contrast to that, there seems to be some causal relationship, or at least a reciprocal relation, between the intensity of Parkinson's syndrome and institutional treatment of the patient on one side and the degree of the decrease in intelligence on the other side.

## Chirurg, Heidelberg

**19**:241-288 (June) 1948

*Intramedullary Nailing and Free Bone Chip Plastic. H. Hellner.—p. 241.
Method of Roentgenographic Demonstration of Brain Abscess by Contrast Medium: Preliminary Report. H. Kolmer.—p. 247.
Contribution to Symptomatology of "Megacolon" with Particular Consideration of Megasigmavolvulus from Malnutrition. W. Hartkopf. —p. 250.
Problem of Overbridging Severe Nerve Lesions. B. Hummel.—p. 253.

**Intramedullary Nailing and Bone Chip Plastic.**—According to Hellner, the effectiveness of intramedullary nailing in genuine pseudarthrosis should not be overestimated. Results in 19 cases of genuine pseudarthrosis, 6 of the humerus, 3 of the forearm, 5 of the femur and 5 of the leg, showed that exact immobilization with the exclusion of all mechanically unfavorable influences is indispensable in addition to intramedullary nailing. Bone autotransplants are required for traumatic pseudarthrosis. Twenty-one cases, 10 of the humerus, 7 of the radius, 2 of the ulna, 1 of the femur and 1 of the leg are reported. The bone plastic is far superior to simple intramedullary nailing as well as to that combined with excision. The bone transplant must be prepared in a carpenter-like fashion, and it must be rammed in, folded in or pinched as a carpenter does it. The simultaneous employment of Küntscher's nail is dispensable, because a plaster of Paris cast is to be applied in every case and because later on the nail must be removed anyway. Küntscher's nailing and autotransplantation do not exclude one another. In no case was the taking of the transplant disturbed by nailing and that in pseudoarthrosis as well as in osteoma and in congenital pseudarthrosis. Reduction osteotomy may be carried out with the nailing technic; dehiscence must be avoided and the fragments must be brought in close contact. Küntscher's nail may be used satisfactorily for other types of osteotomy, likewise.

## Klinische Wochenschrift, Heidelberg

**26**:353-384 (June 15) 1948. **Partial Index**

Dynamics of Insufficiency of the Left Heart. K. Blumberger.—p. 353.
Protein Metabolism During Nutritional Deficiency and During Restoration. H. W. Bansi and G. Fuhrmann.—p. 358.
*New Serum Phenomena During Postoperative Phase After Tonsillectomy. M. Frobenius and Elizabeth Völkel.—p. 368.
Paroxysmal Paralysis and Hyperventilation. W. Skalweit.—p. 371.

**Serum Phenomena After Tonsillectomy.**—The observations reported by Frobenius and Völkel were made on 2,000 patients who had undergone tonsillectomy. Since most of the operations were made on the basis of medical indications, postoperative observations were usually more prolonged than is usually the case in laryngologic departments. It has been suspected that during the postoperative phase processes take place in the serum which may be related to the course of serum disease. If in a healthy subject several intracutaneous wheals are produced with several different normal serums on symmetric locations of the skin of the back, it can be seen that all wheals remain of the same size and behave like a single wheal. If the same is done on a patient nine days after tonsillectomy, wheals develop which rapidly increase to about the size of a penny, are white like porcelain and are surrounded by a red areola with pseudopodia-like extensions. These wheals subside much less rapidly than those that form in normal persons. Such wheal tests were made on 25 patients on the ninth day after tonsillectomy and were repeated with one hundred and fifty different serums. All except one of the persons tested showed the same results. The experiment was repeated on another group of 25 patients on the twelfth day, and all 25 showed a "hyperergic reaction." Summarizing these and other observations, the authors say that during the postoperative period after tonsillectomy characteristic serum phenomena can be elicited which are analogous to the behavior observed after the injection of serum of a heterogenous species. This is the more noteworthy since hemolysins against sheep erythrocytes can be demonstrated in the blood of tonsillectomized patients. These observations suggest the existence of two antigen-antibody systems which develop during convalescence and determine its course. In addition an increase in the nonspecific reactivity of the skin is observed, the course of which is apparently related to the aforementioned processes.

## Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

**92**:1749-1820 (June 12) 1948. **Partial Index**

*Direct Results of Vagotomy in Presence of Gastric Complaints Following Operation on Account of Ulcer. I. Boerema.—p. 1755.
Treatment with Penicillin Aerosol. E. L. Cardozo, M. C. van der Plas and M. van den Ban.—p. 1767.
Development of Large Papules in Scabies. G. Cremer and J. R. Prakken. —p. 1778.

**Vagotomy in Gastric Disturbances After Operation for Ulcer.**—Boerema reviews observations on 25 patients who previously had undergone surgical operations on the stomach, but in whom symptoms had persisted or returned and who on this account had been subjected to a transthoracic vagotomy. In 19 of these, in whom an earlier laparotomy had established the presence of an ulcer, vagotomy completely counteracted the symptoms. Among the 6 in whom the first operation had not disclosed an ulcer, but who had nevertheless been subjected to an operation on the stomach, there were 2 in whom vagotomy

was successful; in 1 there was some improvement and in the other 3 vagotomy was ineffective. Thus vagotomy was effective in the presence of disturbance after gastric operation for ulcer, but not when no ulcer was present.

**92**:1821-1896 (June 19) 1948. **Partial Index**

Investigation of Long Term Results of Rollier's High Mountain Treatment in So-Called Surgical Tuberculosis. P. Frank.—p. 1825.
*Evaluation of Electric Shock Therapy. A. Hutter.—p. 1830.
*Results Obtained in Tuberculous Bronchitis with Large Doses of Vitamin $D_2$, Gold Preparations and Streptomycin. C. Dijkstra.—p. 1835.
Gamma Globulin in Bacterial Infections. S. van Creveld.—p. 1845.

**Electric Shock Therapy.**—Hutter advises that electric shock treatment be carried out during institutional care rather than under dispensary conditions. In schizophrenia there has been a return to insulin and "metrazol" shock as more effective than electric shock, but electric shock has nevertheless symptomatic value, particularly in the presence of restlessness. Electric shock is definitely the most suitable treatment of endogenic depressions, irrespective of severity, duration or age of patient. Manic depressive patients over 70 years of age are usually still strong enough to withstand electric shock treatment. Close cooperation with the cardiologist is important in electric shock treatment and, when there is doubt, an electrocardiogram should be taken before electric shock is induced, but this is not necessary in all patients. The cardiologist will rarely forbid electric shock treatment, except in patients with disturbances in the cardiac conduction system or with serious myocardial changes. A general examination, which should precede the shock treatment, may reveal contraindications, but they are few. A melancholic patient who has diabetes can be subjected to electric shock treatment, even if he receives insulin.

**Large Doses of Vitamin $D_2$, Gold Preparations and Streptomycin in Tuberculous Bronchitis.**—Dijkstra stresses the importance of an early bronchographic and bronchoscopic examination in patients expectorating positive sputum who have no demonstrable cavity. If this is done tuberculous bronchitis is frequently found in these patients. The author presents a number of illustrative cases. These cases also show the favorable therapeutic results obtained with gold preparations, with vitamin $D_2$ and, in some cases, with streptomycin in extensive and severe tuberculous bronchitis.

## Nervenarzt, Heidelberg

**19**:97-200 (March-April) 1948. **Partial Index**

*Prefrontal Leukotomy with Particular Attention to a Case of Compulsion Neurosis. M. Müller.—p. 97.
*Epileptic Attack, Sleep and Periodicity. K. H. Stauder.—p. 107.
Psychologic Investigations on Patients Who Have Sustained Brain Injuries. A. Busemann.—p. 120.
Psychology of Prisoners of War. M. in der Beeck.—p. 136.
Narcolepsy and Regulatory Disturbances in Central Nervous System. W. Skalweit.—p. 140.
Malaria Psychoses. P. Lowitzsch.—p. 146.
Polyneuritis After Bacillary Dysentery. A. Herrlich.—p. 167.

**Prefrontal Leukotomy.**—Müller reviews observations on 26 patients subjected to prefrontal leukotomy. The technic employed was that described by Freeman and Watts. No fatality resulted from the operation in these 26 cases. The author evaluates the results obtained in 20 cases in which more than six months had elapsed since the operation. One case, that of a woman, aged 80, who for fifty years had had a phobic obsession, is reported in detail. In this case the operation resulted in a peculiar change in the emotional life. Defense mechanisms lost their obsessive character and the woman was able to live with more composure and calm. Of the other 19 patients, 1 with paranoia was freed from his symptoms for several months, but, after that, silliness, excessive euphoria, loss of inhibitions and weakness of concentration became evident. Five patients were sufficiently improved so that they could be discharged into familial care. In 7 other patients there was a slight improvement, which rendered them more easily manageable in the institution. The other 7 patients remained uninfluenced by the operation, aside from brief improvement immediately after the operation. Müller concludes that leukotomy can never be a treatment with truly causal effect; but it leads to psychic release. The author warns against exaggerated optimism.

**Epileptic Attack and Sleep.**—Stauder shows that lack of sleep effects in many epileptic patients an increase in attacks. These epileptic patients show increased irritability. During the war the author observed that formerly well men, who had passed beyond the age when epilepsy becomes manifest, occasionally responded to extreme lack of sleep with epileptic attacks. Many of them exhibited the same sleep disturbances as did epileptic patients, anxiety states with motorisms and forms of tremor. The connections between epileptic attacks and sleep are supported by abnormalities in the sleep of epileptic patients such somnambulistic states, motorisms during sleep and disturbances in the waking mechanism; relation between postepileptic sleep and the time of the next attack; the recurrence of attacks during certain hours of the night, and the effect of hypnotics and stimulants on the epileptic attack. In contradistinction to Economo, the author regards postepileptic sleep as comparable to true sleep, particularly because it has a considerable restorative effect. During the advanced stages of epilepsy sleep is insufficiently restorative, and this partly explains the progression and change in the personality. Comparison of bioelectric brain processes during sleep and during attacks throws more light on epileptic sleep phenomena.

## Nordisk Medicin, Stockholm

**39**:1375-1410 (July 23) 1948. **Partial Index**

Spondylarthritis Ankylopoietica. Review. L. Brahme.—p. 1375.
*Antihistamine Treatment in Allergic Diseases. Experimental Basis. Å. Nilzén.—p. 1382.
*Antihistamine Treatment in Allergic Diseases. B. Arner.—p. 1386.
Atrial Flutter in Old Persons. H. Buch and T. Fløystrup.—p. 1399.
Treatment of Cancer of Stomach During Twenty-Year Period. C. Brynjulfsen.—p. 1402.

**Antihistamine Treatment in Allergic Diseases. Experimental Basis.**—Investigations to date indicate histamine to be a factor of decisive importance in anaphylaxis and allergy. Histamine is most likely released by the antigen-antibody reaction. Experimental anaphylaxis reactions in animals and experimental allergy reactions in man can be prevented by drugs antagonistic to histamine. Nilzén says he has demonstrated that urticaria and eczematous reactions can be lessened or prevented by the use of antihistamine.

**Antihistamine Treatment in Allergic Diseases.**—Arner reports that treatment with antihistamine had good or appreciable effect in 15 of 29 cases of allergic rhinitis (10 with residual symptoms after earlier antiallergy treatment, 5 of untreated mild rhinitis), good effect in 4 of 14 not desensitized cases of hay fever and in 16 of 24 desensitized cases, no effect in 19 of 25 cases of bronchial asthma and uncertain effect in 6, good effect in acute urticaria, good or appreciable effect in 6 of 19 cases of chronic urticaria and good effect in 11 of 12 cases of serum sickness. Secondary by-effects were rare and mild. Specific desensitization is superior to treatment with antihistamine preparations alone, but antihistamine affords relief in cases with residual symptoms after specific desensitization. The effect of antihistamine during specific desensitization as studied in 35 cases was inferior to that of epinephrine; use of antihistamine during specific desensitization did not seem to hasten desensitization. Evaluation of some of the results of antihistamine treatment published is difficult because it is not clear whether or not other antiallergic treatment was also given and the effects of the antihistamine are not classified.

## Nourrisson, Paris

**36**:113-148 (July-Aug.) 1948

Acute Leukosis in First Year of Life. R. A. Marquézy and P. Royer.—p. 113.
*Present State of Vaccination and of Serum Therapy Against Whooping Cough. F. Verliac.—p. 126.
Clinical Aspect of Diphtheria of Infants in Course of Epidemic of 1945-1946. R. Sacrez, P. Beyer, T. Uhl and Miss A. Sagot.—p. 139.

**Vaccination and Serum Therapy Against Whooping Cough.**—According to Verliac, the new concepts of prophylaxis and treatment of pertussis in the United States hold out hopes of a wider employment in France of vaccination and serum therapy the practice of which so far has been rather limited. The effectiveness of vaccination within the first six months of life has not yet been demonstrated beyond doubt. Vaccination,

therefore, is suggested of children at the age of 6 months; it may confer immunity about the ninth or the tenth month of life. The following year the injection should be repeated in case of possible contamination. Biologic tests, such as the determination of agglutinins and opsonins, and particularly the agglutinogen skin test, make it possible to distinguish children who are susceptible to the disease from immunized children and thus to determine the effectiveness of the vaccination. When contact is suspected, and as soon as possible after that, prophylactic injection of human or rabbit antipertussis serum should be given to a child which has not been vaccinated. Highly satisfactory results from the same serum in cases in which diagnosis of pertussis has been established demonstrated the usefulness of this serum particularly in extremely young children or in those with pulmonary complications. These methods of treatment must be combined with the usual measures of hygiene and with symptomatic treatment. Systemic treatment with streptomycin or treatment with streptomycin aerosol is suggested for grave cases of pertussis.

## Revista de la Asoc. Med. Argent., Buenos Aires

**62:**277-324 (June 15-30) 1948. **Partial Index**

*Blastomas of Mesenchyma of Bones. D. Brachetto-Brian.—p. 285.
Action of Rutin on Capillary Fragility and Permeability. A. Pavlovsky and H. Castellanos.—p. 309.

**Blastoma of Mesenchyma of Bones.** — Brachetto-Brian reports clinical, roentgenologic, pathologic and therapeutic observations on 38 cases of so-called blastoma of bone mesenchyma. These tumors originate in the reticular tissue of the bone marrow and should be termed reticuloblastomas. The malignant type is highly metastatic, involving, most frequently, the bones. The disease is fatal in three to seventeen months after appearance of the early symptoms of tumor. The sensitivity of the tumor to roentgen rays depends on the variety of the tumor, which, according to the author, can be (1) syncytial, (2) lymphocytic, (3) angiovascular and (4) xanthocellular. The syncytial variety is represented by tumors of the type of Ewing's sarcoma. These tumors have the histologic structure and potential capacity of evolution of mesenchymal tissue and a marked sensitivity to roentgen rays. The lymphocytic variety includes the greatest number of cases of malignant reticuloblastoma (the classic lymphosarcoma of bones). These tumors show histologic changes with serial transitions of syncytial reticuloblastoma into highly differentiated lymphosarcoma. The angiovascular variety of tumor may be benign or malignant. Benign tumors in this group are recurrent, whereas malignant tumors are moderately malignant. The angiocellular type is stubbornly recurrent, even after the most ample surgical resection. The xanthocellular variety is rare. Tumors of this variety are either benign or malignant. The malignant form can be compared to systemic xanthosarcoma. It is the form in which metastases to the bones are most frequent.

## Schweizerische medizinische Wochenschrift, Basel

**78:**777-800 (Aug. 14) 1948. **Partial Index**

Nature of Sympathetic Biokatalyzer in Nerves of Spleen of Cattle. U. S. v. Euler.—p. 777.
Prostatogenic Retention as Expression of Latent Tetany. R. Allemann. —p. 778.
Clinical Experience with New Preparation of Coumarin Derivatives. Z. Reiniš and M. Kûbik.—p. 785.
*Treatment of Abscess of Small Pelvis by Local Injection of Penicillin. D. Stucki.—p. 790.

**Local Penicillin Treatment of Abscess of Small Pelvis.** —Stucki treated 4 women between the ages of 27 and 51 with abscess of the pelvis of genital origin, by local injections of penicillin. The first patient had suppurating streptococcic parametritis with a fistula well encapsuled and surrounded by a fibrous wall and resistant to intensive treatment with penicillin and sulfonamide drugs for three months. Closure of fistula and disappearance of the tumor were obtained after four local injections of 100,000 units of penicillin within eight days. Definite recovery was demonstrated on examination within six months. Satisfactory results were obtained in the second patient with acute gonococcic pyosalpinx to whom four local injections of 200,000 units of penicillin were given. The local treatment was reinforced by systemic treatment with 160,000 units of penicillin daily for eight days. Recovery occurred, but an adnexal tumor persisted. Clinical recovery was obtained in the third patient with parametritis due to streptococcus and staphylococcus. Suppuration was controlled with five injections of 100,000 units of penicillin, but the abscess was transformed into an infiltrated mass which required three additional local injections of 100,000 units of penicillin and systemic treatment with penicillin for three weeks. Treatment of the fourth patient with bilateral adnexitis and right pyosalpinx due to highly virulent streptococcus was a failure. The tumor disappeared after six local injections with 100,000 units of penicillin. Pyosalpinx developed at the left side and disappeared after three local injections of 100,000 units of penicillin, but new abscesses occurred which involved the entire small pelvis. Sulfonamide drugs, penicillin and streptomycin were ineffective, and death occurred after seven months of treatment. Local treatment with four to six injections of 100,000 to 300,000 units of penicillin every second day is recommended for pyosalpinx and acute and chronic parametritis, resulting in rapid recovery or modifying the patient's condition to such an extent that secondary surgical intervention may safely be carried out.

## Semaine des Hôpitaux de Paris

**24:**1999-2040 (Aug. 18) 1948. **Partial Index**

Biochemistry of Muscular Atrophy. J. C. Dreyfus and G. Schapira. —p. 1999.
*Study of Psychic Disturbances Associated with Tuberculous Meningitis Treated with Streptomycin. J. Scherrer.—p. 2004.
*Contribution to Study of Part Played by Microbes in Pathogenesis of Chronic Nephritis: Experimental Research on Permeability of Normal and Pathologic Kidney by Microbes. R. Carasso.—p. 2011.

**Psychic Disturbances Associated with Tuberculous Meningitis.**—Scherrer reports the occurrence of psychic disturbances in 21 of 30 patients with tuberculous meningitis in the first phase of the disease. The great majority of the patients were children and adolescents. Streptomycin therapy was instituted within one to ten days after the appearance of clinical signs of meningitis. The psychic disturbances consisted essentially of reduced consciousness reaching from a diminution of attention to stupor and to an anxiety state. The patients presented temporospatial disorientation, enuresis and occasionally hallucinations. The psychic disturbances were precocious and showed a tendency to regression on treatment with streptomycin. Dynamics of the cerebrospinal fluid may play a part in the pathogenesis of the mental confusion and amnesia seen in tuberculous meningitis.

**Microbes in Pathogenesis of Chronic Nephritis.** — Carasso made cytobacteriologic examinations of the urine of 34 patients with chronic nephritis and of 9 patients with ascending nephritis; i. e., chronic nephritis secondary to a prolonged infection of the pelvis of the kidney. In 29 of the 34 patients the urine was sterile and contained some leukocytes. In 6 of the 9 patients with ascending nephritis the urine contained abundant Bacillus coli and a large number of leukocytes. An emulsion of B. coli was injected into the marginal vein of the ear of adult healthy rabbits, and the urine and the blood of the animals were examined before and after the injection. The urine of the animals was sterile up to the seventh hour after the injection, and the culture of the urine was negative. A small number of bacilli were demonstrated in the urine after the seventh hour, and a large number appeared within the twenty-fourth to the forty-eighth hour. Decided albuminuria was manifested after the twenty-fourth hour of the inoculation. Characteristic lesions of acute glomeruloepithelial nephritis or of degenerative epithelial nephritis were revealed on microscopic examination of the kidneys. Blood culture from the rabbits was negative during the first hours of the inoculation; it became positive about the sixth hour, reaching its maximum at the twenty-fourth hour, and was negative again about the seventy-second hour. The bacilli probably pass out of the kidney by way of epithelial or glomeruloepithelial lesions. The microscopic picture of the lesions and the fact that bacillemia preceded bacilluria favor the hematogenic origin of this type of nephritis.

# Book Notices

**Textbook of the Nervous System: A Foundation for Clinical Neurology.** By H. Chandler Elliott, M.A., Ph.D., Assistant Professor of Anatomy, Medical College of the State of South Carolina, Charleston. With an introduction by Wilder Penfield, M.D. Fabrikoid. Price, $8. Pp. 384, with 158 illustrations and an atlas. J. B. Lippincott Co., 227-231 S. 6th St., Philadelphia 5, 1947.

This text concerns itself with descriptive anatomy of the human nervous system, neuroanatomy, and endeavors to present an integrated study of the nervous system by correlating structure with function. The author divides the text in two parts. Part I presents a brief and simple, yet complete, sketch of the nervous system. Part II, employing the sketch or framework of part I, adds details of structure and function which are necessary for a scientific knowledge of the nervous system.

The text is well illustrated by simple and understandable drawings which should appeal to the student and instructor alike. An adequate atlas of photographs with key drawings of representative levels of the nervous system is included at the end of the text.

The subject matter is up-to-date and cited references impress the reader that neurology is a relatively new science which is steadily progressing. This text, while primarily written for the medical student, should appeal to students who have less need for a detailed study of the human nervous system.

**Bacterial and Virus Diseases: Antisera, Toxoids, Vaccines and Tuberculins in Prophylaxis and Treatment.** By H. J. Parish, M.D., F.R.C.P.E., D.P.H., Clinical Research Director, Wellcome Foundation, Ltd. Cloth. Price, $2.75. Pp. 168, with illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1948.

This pocket size book was written to present in convenient form the essential principles of immunology and their practical application in human medicine. The book is composed of sixteen chapters divided into three sections. The first section, entitled "General," is composed of four chapters. The second section, entitled "Antisera," is composed of five chapters which deal with the general properties of serums, antitoxic serums, antivenoms, antibacterial serum and antiviral serums. The third section is entitled "Serological Products for Active Immunization and Some Diagnostic Reagents," and is comprised of seven chapters dealing with immunization against diphtheria, scarlet fever, staphylococcus infections, tetanus and gas gangrene. One chapter is devoted to bacterial vaccines and one to tuberculins and BCG. vaccine. One chapter is concerned with active immunization against virus diseases. The final chapter is a tabulation of dates and discoveries with reference to specific diseases.

This book should prove valuable to the busy physician and to medical students. Obviously, with the discovery of the sulfonamide drugs and antibiotics, some of the work with antiserums and vaccines is rapidly becoming history.

**The Chemistry of the Carbon Compounds.** By Victor von Richter. Edited by the late Professor Richard Anschütz. Volume IV: The Heterocyclic Compounds. By F. Reindel (Translated by M. F. Darken), and Organic Free Radicals. By Ludwig Anschütz (Translated by A. J. Mee). Third English edition newly translated from the twelfth German edition. Cloth. Price, $12. Pp. 498. Elsevier Publishing Co., Inc., 215 Fourth Ave., New York 3, 1947.

This book, covering heterocyclic compounds and organic free radicals, is the last of the four volume series translated from the twelfth German edition. It is a concise and thorough text, covering the literature on these two topics through 1932. Delay in translation and publication due to the war accounts for the gap regarding recent literature.

**Youth in Despair.** By Ralph S. Banay. Cloth. Price, $3.50. Pp. 239. Coward-McCann, Inc., 2 W. 45th St., New York 19, 1948.

The former psychiatrist of Sing Sing gives an excellent review of all the legal, social and medical aspects of juvenile delinquency. He correlates all the findings of research; he examines carefully, with objectivity and understanding, the various factors which are considered as contributing to it, like the effects of war, poverty, broken homes, adverse parental and school influences, physical and mental diseases and handicaps. The discussion of all these factors is interspersed with illustrative case histories. The author concludes that the medical aspect, and particularly the psychologic and psychiatric dynamics of each child, are the most decisive factors leading to delinquency and must be primarily considered in prevention and treatment. The various methods to understand the individual delinquent are enumerated and evaluated, such as taking social history, the various psychologic tests and psychiatric interview; psychodrama and painting are included as methods of investigation and therapy.

The author examines critically the existing laws, agencies and institutions which deal with the problem, and finds them deplorably inadequate in every regard. He describes some well intentioned plans developed in the United States, England and Switzerland; but none is carried out to any extent. There is no coordinating over-all agency. Most detrimental of all, public opinion still adheres to a medieval notion that punishment is a means of prevention and correction, while actually it was proved a complete failure in both regards. Also the present trend toward slum clearance and extension of recreational facilities, desirable as it is, will not contribute much to the solution of the problem. It must be attacked at its core, which the author sees in the emotional and psychologic maladjustment of the child. Each child, not only the "problem child," should receive routine psychiatric-psychologic examinations, to the same extent as physical examination of school children is advocated.

In his distressing description of the inadequacies in contemporary efforts to deal with the problem of delinquency, the author does not realize one of the most distressing aspects. He advocates the establishment of child guidance clinics and extensive use of psychiatrists as an indispensable means to combat delinquency. But at the same time the author, who is psychoanalytically oriented, gives psychologic explanations which can hardly convince the public, the law makers and social institutions of the trustworthiness of psychiatric approaches. He considers delinquency "as compensative releases of unrequited sexual urges" (p. 103). He states that "the infant is all sex" (p. 102). The use of guns and knives is to the author a sign of obvious sexual aggression, because both are phallic symbols (p. 80). Such interpretations of dubious scientific validity are bound to defeat the author's plea for entrusting psychiatrists with the leadership in the fight against juvenile delinquency.

However, as a whole, the book is an excellent, clearly written and generally objective guide through the maze of conflicting reports and divergent recommendations on the subject.

**Eskimo Doctor.** By Aage Gilberg. Translated by Karin Elliott. Cloth. Price, $3. Pp. 229, with photographs by the author. W. W. Norton & Co., Inc., 101 Fifth Ave., New York 3, 1948.

Prior to World War II, Greenland, the largest island in the world, was a Danish colony governed by the Royal Danish Trading Company in the interests of the Danish Crown Family. Its eastern, ice bound coast was practically uninhabited, while on the western shore as far north as Godhavn, on Disko Island, there were a number of provinces, each with a capital, governor, numerous artisans with their families and a contingent group of Eskimos, called in this book West Greenlanders, all of whom were in close contact with the Danish civilization in these outposts. Far to the north lived the Polar Eskimo in the region of Melville Bay, Cape York and Etah, until recent years without contact with or knowledge of the outside world, except for the brief visits of exploring expeditions. Access to Greenland was prohibited to all except those on company service, expeditions such as those of Commander MacMillan and Captain Bob Bartlet requiring permission obtained through the two departments of state.

Knud Rasmussen, son of a Danish governor and Eskimo mother, educated in Copenhagen as an ethnologist and anthropologist, totally ignored all regulations and established on Wolstenholm Sound, among the Polar Eskimos, a post named Thule which served successfully as a station for trading fur, ivory and Eskimo products, for a modest amount of enlightenment to the natives and as a base for his highly scientific Thule expeditions.

In this remote post, shortly after Rasmussen's death, a young Danish physician and his bride arrived to remain for a year. He, in his undergraduate days, had accompanied the Danish

explorer Lauge Koch on two summer trips to the barren, uninhabited coast of Northeast Greenland, returning with great desire to visit the civilized west coast and to know the natives, particularly the Polar Eskimo.

The narration is a humorous, objective and realistic account of the character of these people, their social, domestic and economic problems, their maladies, superstitions, behavior under routine and critical circumstances, and their innate intelligence, this being entirely in accord with similar estimates by other of longer and more widespread experience.

His sledge trips by dog team in the long winter night to distant points are well told and without undue emphasis, and his portrayal of the Polar Eskimo as a jovial, fearless, kindly and friendly being explains his desire to return. The prevalent diseases, particularly those to which the Eskimos have acquired no racial or individual immunity, such as tuberculosis, with frequent meningitis, and the common childhood diseases of measles, whooping cough and scarlet fever, formerly unknown in the Far North, though prevalent in Southern Greenland as the result of frequent interchange of Danish residents, are at present treated at Thule, because of availability of sulphonamide drugs and other antibiotics, probably as effectively as in many areas in this country.

**Recent Advances in Obstetrics and Gynæcology.** By Aleck W. Bourne, M.A., M.B., B.Ch., Obstetric Surgeon to St. Mary's Hospital, London and Leslie H. Williams, M.D., M.S., F.R.C.S., Obstetric Surgeon to In-Patients, St. Mary's Hospital. Seventh edition. Fabrikoid. Price, $6. Pp. 326, with 85 illustrations. The Blakiston Co., 1012 Walnut St., Philadelphia 5, 1948.

In the last twenty-two years, seven editions of this book have appeared. Ten chapters are devoted to obstetrics and six to gynecology. At the end of each chapter is a list of the references which are abstracted and discussed by the authors. The obstetric subjects chosen are: nutrition in pregnancy and fetal development, weight changes and water retention in pregnancy, the anaemias of pregnancy (by L. J. Davis), anesthesia and analgesia in obstetrics, penicillin in obstetrics, lactation, vitamin K and hemorrhagic disease of the newborn, erythroblastosis, stillbirth and neonatal death and radiology in obstetrics (by E. Rohan Williams).

The gynecologic subjects are: cancer of the cervix uteri, stress incontinence, sympathectomy, penicillin in gynecology, radiologic investigation and diagnosis in gynecology (by E. Rohan Williams) and roentgen therapy in gynecology (by W. M. Levitt). The authors not only have abstracted many articles dealing with these subjects but also have discussed the merits of the articles. They have accomplished their task admirably because the sixteen subjects are well chosen and thoroughly analyzed. The book should prove to be useful to all obstetricians and gynecologists.

**Atlas of Practical Incisions and Some Operative Procedures.** By Oliver C. Cox, M.D. Drawings by Garnet W. Jex; Photographs by John W. McGuire. Cloth. Price, $3. Pp. 85, with 61 plates. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1947.

The author attempts to justify the small well placed incision in surgery. A number of photographs show the desired cosmetic effect and a few incisions are illustrated. Certainly, the cosmetic effect should be a secondary consideration. It does not seem possible to expose adequately the biliary ducts by the incision shown. A fine appendectomy scar is not necessarily the hallmark of surgical competency. This book adds little to medical literature except to show that a fine scar is attainable.

**Lehrbuch der Augenheilkunde.** Herausgegeben von M. Amsler, et al. Unter Mitarbeit von J. Babel, et al. Cloth. Price, 85 Swiss francs. Pp. 858, with 342 illustrations. S. Karger, Basel, Switzerland, 1948.

In the introduction to this large volume the authors give as the prime reason for this textbook in German by Swiss ophthalmologists the fact that because of the second World War, such an up-to-date text could not be published by German authorities. Many of these same Swiss ophthalmologists have published much in the literature. Brückner, Amsler and Vogt, now deceased, have written textbooks. Vogt's work with the slitlamp while head of the department at the University of Zurich is basic and world renowned.

The textbook follows the usual pattern with chapters on methods of examination, diseases of the various ocular tissues, anamolies, injuries, etc.

Many of the illustrations are of outmoded instruments; others are foreign to English-speaking ophthalmologists. The illustrations of anatomy and optic pathways are unusually fine. The index is good but there is no reference index. The authors should be given an E for effort in publishing this book during such trying times, but in general it is not up to the standard of previous textbooks in German. Undoubtedly improvement will be made if a second edition is forthcoming.

**L'oeuvre scientifique de Fr. J. Rainer.** I: Neurologie végétative. II. Structure fonctionnelle. III. Anthropologie, morphologie (varia), bibliographie. Paper. Pp. 57; 154; 121, with 75; 115; 105 illustrations. Monitorul oficial şi Imprimeriile Statului, Imprimeria naţională, Bucharest, 1945.

These three volumes represent the collected publications of the author published posthumously by the Romanian Academy in French. Volume I contains papers on the autonomic nervous system, including the thoracic sympathetic nerves, cardiac nerves, nervi erigentes and innervation of the arteries. Plates illustrating cardiac nerves and the sympathetic and parasympathetic nerves of the neck and chest are excellent. Volume II relates to functional morphology of structures including the dura mater, periosteum, face, pelvis, vertebral column, pericardium and pacinian corpuscle. Volume III is a miscellaneous assortment. Papers dealing with variations in the hepatic fissures, genesis and structure of elastic fibers, variations in the coracobrachialis and biceps brachii muscles, innervation of the abdominal wall and the lymphatic system of the heart are included. Plates of lymphatic vessels of the heart are noteworthy.

Anatomists and others interested in special topics treated in these works will find them useful.

**Nouveaux traitements de l'insuffisance hépatique.** Par Jean Cottet et Nicolas Dobo. Préface de M. le Professor E. Chabrol. Paper. Price, 375 francs. Pp. 210. Editions médicales Flammarion, 22 rue du Vaugirard, Paris, 6e, 1948.

This book reviews the present knowledge and current hypotheses governing the treatment and prevention of hepatic disease and hepatic failure. After a short historical review, the rationale, indications and contraindications and methods of the different forms of treatment of hepatic insufficiency are discussed. This includes high carbohydrate diet with and without injections of insulin, administration of liver extracts, bile salt therapy, administration of sulfur (especially in the form of glutathione and methionine), and the use of the various vitamins and hormones. Another part deals with the physiopathologic basis and the practical use of the therapy with the different lipotropic substances and of the oral and parenteral high protein regimen. Special emphasis is given to therapeutic results in cirrhosis. The available literature is well and critically reviewed and an extensive bibliography makes the booklet valuable to the American reader. Many of the facts presented and the conclusions reached are based on American and also on British or German investigations.

**Pye's Surgical Handicraft: A Manual of Surgical Manipulations, Minor Surgery, and Other Matters Connected with the Work of Surgical Dressers, House Surgeons, and Practitioners.** Edited by Hamilton Bailey, F.R.C.S. Eng., Surgeon, Royal Northern Hospital, London. Fifteenth edition. Cloth. Price, $7. Pp. 668, with 789 illustrations. William Wood & Co., Mt. Royal & Guilford Aves., Baltimore 2, 1947.

This book attempts to educate house surgeons on practical technics in the hospital. It does not compare with similar books issued in this country. Some of the methods are primitive. The book is of little value for American interns or residents.

**Food, Nutrition and Health.** By E. V. McCollum, Ph.D., Sc.D., and J. Ernestine Becker, M.A. Sixth edition. Cloth. Price, $2. Pp. 146. The Authors, Gilman Hall, Johns Hopkins University, Baltimore 18, 1947.

This book presents the basic knowledge of nutrition in a concise simple manner. It is written for the public and may be recommended to the intelligent layman who desires to procure a sound foundation in food values and nutritional principles.

# Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

## SKIN TEST TECHNIC

***To the Editor:***—**I usually inject tetanus antitoxin for passive protection in two doses, 3 minims at once and the rest after half hour if there is no reaction. Is this method sufficient to prevent anaphylactic reaction? If not, how should the skin test be performed?**

**M.D., Illinois.**

ANSWER.—The following outline describes the cutaneous tests employed to determine the presence or absence of sensitivity to the serum employed; in the case of tetanus, usually horse serum.

*Cutaneous Tests*

| Technic | Remarks |
|---|---|
| A. Scratch test | |
| 1. Make 2 superficial scratches on front (volar) surface of either forearm | 1. Positive local reaction: area of edema about 0.5 inch in diameter with erythema (like a wheal), with or without finger-like projections at circumference (pseudopodia); appears within 15 to 20 minutes |
| 2. Apply a drop of 1:10 dilution (0.1 cc. serum in 9.9 cc. of isotonic NaCl solution) over upper scratch (use lower scratch as control) | 2. A negative reaction does not always mean that it is safe to give serum |
| 3. If, after 15 to 20 minutes, no local or constitutional reaction occurs, proceed to the intracutaneous test, described under (4) | 3. A positive reaction does not always indicate that it is dangerous to give serum |
| B. Intracutaneous test | 4. But, when a positive reaction does prove to indicate clinical sensitivity, the sooner the reaction, and the greater its size, the greater is the likelihood of a constitutional (anaphylactic) reaction |
| 4. Raise a tiny wheal (smallest amount of serum practicable) on the front (volar) aspect of either forearm | 5. The tests must be given each time serum is to be injected (may change from positive to negative or vice versa) |
| 5. Use the following dilutions: Presumptive positive sensitivity*: 1:10,000 dilution Negative sensitivity*: 1:1,000 dilution Under all circumstances: at 15 to 20 minute intervals, if preceding dilutions give negative readings, repeat tests in the order of the next lower dilution: 1:1,000, 1:100, 1:10 | 6. Constitutional reactions (various forms of "serum sickness") to skin tests are identical with those which follow injections of serum for prophylaxis or therapy; they may follow with either negative or positive skin reactions |

* Presumptive diagnosis of serum sensitivity: (*a*) presence of allergic complaints (hay fever, asthma, hives, food sensitivities, migraine, eczema, etc.) in the patient or relatives (past or present); (*b*) serum injections in the past (tetanus, diphtheria, pneumonia, etc.), without any reaction (early or late). Probable sensitivity: (*a*) skin reactions (or ophthalmic reactions) positive on previous occasions; (*b*) allergic complaints (sneezing, coughing, wheezing, burning eyes, stomach ache, hives, itching, headache, etc.) when around horses (if horse serum is to be used) or cows (if bovine serum is to be used). Positive sensitivity: (*a*) allergic difficulties from previous injections of horse serum; (*b*) constitutional (anaphylactic) reaction from cutaneous or ophthalmic tests for sensitivity; (*c*) constitutional reaction during present injections.

The following outline should be helpful in avoiding mild to fatal reactions to prophylactic and therapeutic doses of antitetanic serum:

1. Administer tetanus antitoxin only if essential.
   (*a*) Are the indications present? Can care of the local lesion by itself be adequate?
   (*b*) Can tetanus toxoid be used in place of tetanus antitoxin? A booster dose of 0.1 cc. of either fluid or alum-precipitated toxoid is adequate even though tetanus toxoid was injected five to six years previously. In certain instances (delay, strong local lesions, hemorrhage) a booster dose of tetanus toxoid should be supplemented with 10,000 units of tetanus antitoxin.
2. Determine whether the patient is sensitive to horse serum (history, physical examination, skin tests: already presented in the preceding paragraphs).
3. Under all circumstances, adopt the following measures to avoid reactions to tetanus antitoxin:
   (*a*) Administer an appropriate antihistamine compound, in sufficient quantity, orally or parenterally (when feasible), at least thirty minutes before injecting tetanus antitoxin (no matter what the history, physical examination or tests reveal).
   (*b*) A syringe containing 2 cc. of epinephrine hydrochloride (1:1,000) should be immediately available to treat any acute serum reactions.
   (*c*) A syringe containing 5 cc. of diphenhydramine hydrochloride (for intravenous injection) should be immediately available to assist in the control of acute serum reactions (1 to 2 cc. to be injected, and repeated as necessary).
   (*d*) In the presence of a probable or positive diagnosis of serum sensitivity, the patient should be hospitalized for at least twenty-four to forty-eight hours.
   (*e*) All patients who receive tetanus antitoxin (independent of history, physical examination or tests) should be given one of the antihistamine compounds for fourteen days to avoid all forms of serum sickness.
   (*f*) In the presence of a presumptive, probable, or positive diagnosis of serum sensitivity, in addition to antihistamine therapy, hospitalization and epinephrine hydrochloride (as needed), employ the following method of hyposensitization:

| Dilution of Antitoxin | Volume | Route | Interval and Remarks |
|---|---|---|---|
| 1:1,000 | 0.1<br>0.2<br>0.3<br>0.5<br>1.0 | Subcutaneous | 15 minutes between each injection of antitoxin |
| 1:100 | 0.1<br>0.2<br>0.5<br>1.0 | Subcutaneous | In case of reactions during course of injections, treat reactions, continue dose preceding reaction, gradually increase dose if further difficulty is not encountered |
| 1:10 | 0.1<br>0.2<br>0.5<br>1.0 | Subcutaneous | In case of reactions, increase intervals between injections to 30 minutes |
| None (undiluted) | 0.1<br>0.2<br>0.5<br>1.0 | Subcutaneous | |
| Rest of serum as one dose intramuscularly | | | |

   (*g*) At an appropriate interval after serum prophylaxis (four to six weeks after the now recommended dose of 5,000 to 10,000 units) inject 0.5 cc. of alum-precipitated tetanus toxoid (use the newly marked purified products) and repeat dose in one month. Thus, on subsequent occasions, tetanus toxoid may be employed in the form of booster doses in place of antitetanic serum.

## TUBERCULOSIS AND COCCIDIOIDOMYCOSIS

***To the Editor:***—**Does a person who has recovered from severe pulmonary tuberculosis have increased susceptibility to pulmonary forms of coccidioidomycosis or histoplasmosis? May susceptibility be increased because of scarring from the tuberculosis? Are any parts of the United States free from these infections or are known endemic areas localized?**

**D. M. Nelson, M.D., Detroit.**

ANSWER.—Persons who have recovered from severe pulmonary tuberculosis have not been shown to have increased susceptibility to coccidioidomycosis or histoplasmosis. Occasionally after tuberculosis a residual bronchiectasis occurs, but this of itself should not predispose to these other specific infections.

Coccidioidomycosis has been found in practically every part of the United States in persons who have not left these areas. There are certain parts of the country where the disease has a high incidence; namely, the desert regions of the West and the valley regions of California. The infection is common in these areas and rare in other parts of the country.

## PREPARATION OF SKELETON

***To the Editor:***—**How can I bleach and dry the bones of a human skeleton?**

**Richard C. Batt, M.D., Glens Falls, New York.**

ANSWER.—Since the query refers merely to bleaching and drying of bones in the preparation of a human skeleton, nothing will be said here about the maceration, cleaning and degreasing of bones.

If carbon tetrachloride has been used in the degreasing process, the bones must be thoroughly dry before bleaching. Dry not too rapidly (for bones will crack—long bones, lengthwise—if oven or hot sun is used in drying). Then place the dry bones in hydrogen peroxide and water (2 or 3 parts of water and 1 part of hydrogen peroxide) for bleaching. The length of time required for this process will vary (hours or days), depending on the thickness or character of the bones and the potency of the hydrogen peroxide. When the bones have attained the desired whiteness, dry them (again not too rapidly).

## SPONTANEOUS PNEUMOTHORAX

*To the Editor:*—**A man, aged 30, has recently had his sixth spontaneous pneumothorax in two years. Three have involved the right side and three the left side. On the last occasion a partial collapse of the upper lobe of the left lung was demonstrated by roentgen examination of the chest. Evidence of active or healed tuberculosis was absent. Except for the aforesaid finding physical examination did not reveal any significant abnormality. Complete blood counts, serologic reactions, sedimentation rate and urine were normal. The patient's brother has had advanced pulmonary tuberculosis, but he has not had contact with his brother in the last ten years. The patient's occupation requires moderately strenuous exertion, but several of the attacks have occurred at rest. Symptoms consist of a moderately severe dull aching pain (described as similar to "indigestion") and slight dyspnea. Each attack necessitates several weeks of convalescence, and the patient is anxious that something be done in an effort to prevent recurrences. I have considered two courses of action: (1) a course of treatment with streptomycin, chiefly because of the positive family history and the fact that in a certain proportion of such cases clinical tuberculosis eventually develops; (2) injection of an irritating substance into the pleural space in an effort to produce an adhesive pleuritis. Would a concentrated solution of penicillin produce such an effect? This second method seems too drastic to me. I would appreciate advice concerning the handling of this patient.**

**Ben F. Roach, M.D., Lexington, Ky.**

ANSWER.—Spontaneous collapse of a lung is a rather unusual event, rarely happening more than once in the same person, and in most cases is the result of rupture of a subpleural bleb or cyst. Repeated spontaneous collapse of one or both lungs may occur with sufficient frequency to warrant some type of therapy designed to obliterate the pleural space, thereby preventing further recurrence of the difficulty. Should spontaneous pneumothorax be due to tuberculosis, however, specific therapy for the underlying pathologic condition should be obtained. In order to rule out active tuberculosis in a patient with spontaneous pneumothorax, roentgenograms of the chest should be taken before and during reexpansion of the lung in an effort to demonstrate abnormal shadows. Repeatedly negative roentgenograms and/or several successive negative guinea pig inoculations with gastric samples should adequately rule out the presence of an active tuberculous focus. If the disease has been excluded at the time, the patient is no likelier to contract tuberculosis later than the average patient. (Cohen, S., and Kinsman, J. M.: Nontraumatic Spontaneous Pneumothorax Among Military Personnel, *New England J. Med.* **235**:461 [Sept. 26] 1946). Because of the toxic properties of streptomycin and the easily developed resistance to the drug, even a prophylactic course of this medication would be definitely contraindicated in the case cited. After tuberculosis has been ruled out in a case of repeated, incapacitating spontaneous pneumothorax, as in the patient mentioned, production of an adhesive pleuritis to obliterate the pleural space is probably indicated. John D. Steele (*Am. Rev. Tuberc.* **56**:299 [Oct.] 1947) recommended insufflation of 8 to 10 Gm. of sterile talc through a thoracoscope as the most successful means of obtaining satisfactory results. Other methods of producing adhesive pleuritis have not yielded such uniformly good pleural symphysis.

## PNEUMATIC TOURNIQUET

*To the Editor:*—**What is the accepted method of using a pneumatic tourniquet to produce a bloodless field in surgery of the extremities? What is the proper inflation pressure and how long can the tourniquet be safely applied?**

**M.D., New York.**

ANSWER.—A pneumatic tourniquet creates a wide even pressure and is quickly inflated and deflated. It may be operated by a hand or foot pump. For the upper extremity an ordinary blood pressure cuff is sufficient with pressures well above the systolic blood pressure of the patient. For the lower extremity, the Bird-Campbell tourniquet is useful and is inflated to 15 pounds of pressure. It is wise to deflate the cuff every thirty to forty-five minutes to avoid ischemic neuropathy of the peripheral nerves. The tourniquets are obtainable through larger instrument dealers.

## INFORMING THE PATIENT WITH CANCER

*To the Editor:*—**In view of the present trend toward making the public "cancer conscious," what should the physician's feeling be in regard to revealing a diagnosis of cancer to the patient? Will not a more enlightened patient be better able to cooperate with the physician if he is told the true state of affairs?**

**Russell E. Schlitter, M.D., Highwood, Ill.**

ANSWER.—There can be no question about the vital advantage to the patient with cancer of cooperating intelligently with his physician. To do so, the patient must understand the situation. Consequently, whenever it is possible without disadvantage to the patient the diagnosis of cancer should be discussed with him as tactfully and optimistically as possible. If exact information has to be withheld for some special reason, the physician should establish confidential relations with some suitable member of the patient's family.

## TUBERCULIN PATCH TESTS

*To the Editor:*—**Of what significance is a positive reaction to a patch test for tuberculosis in an adult?**

**M.D., New York.**

ANSWER.—A reaction to the patch tuberculin test in an adult has the same significance as a reaction to the epidermal (Pirquet), the intracutaneous (Mantoux) or any other method of administering the tuberculin test. A tuberculin reaction in an adult has the same significance as in a child; namely, that at least primary lesions are present and that they probably contain living tubercle bacilli. If a reaction occurs the first time that an adult is tested one is unable to determine how long the primary lesions (tuberculous infection) have been present. Many adults now receive tuberculin tests periodically as long as there is no reaction. If a reaction occurs in a person who, six months or a year before, was a nonreactor, one is certain that there has been an effective contact with a contagious case of tuberculosis in the interim. This is as significant as when a child of 6 months to 1 year is found to be a reactor from the standpoint of dating the exposure and the duration of the disease.

After tubercle bacilli first invade the body there is an interval of three to seven weeks before the tissues are so sensitized that a reaction is elicited by the patch or any other method of administering tuberculin. This is the preallergic stage of the disease. When allergy first appears it soon reaches such a high level as to be detectable by an exceedingly small amount of tuberculin. However, if no exogenous or endogenous reinfection occurs it wanes until it can be elicited only by larger doses of tuberculin such as 1 mg. In some cases it even sinks below this level, and if all the tubercle bacilli die in the body, which probably happens more frequently than was formerly believed, allergy completely disappears, so that there is no response to 5 or even 10 mg. of tuberculin.

The adult who reacts even mildly to the patch test still has a reasonably high degree of allergy. When an intense reaction follows the administration of the patch test it probably means that the primary disease developed relatively recently or that the person is being reinfected endogenously or exogenously.

Inasmuch as only living tubercle bacilli result in allergy elicited by the tuberculin test and since only in persons whose bodies contain tubercle bacilli does clinical tuberculosis develop, it is exceedingly important that every adult reactor to the patch or any other method of administering tuberculin be examined at once to determine whether lesions have become so gross that their locations can be detected by such procedures as roentgen inspection of the chest; if none is found the person should be reexamined periodically, as such lesions may be in evidence at any subsequent time as long as the allergy persists. The old belief, once a reactor, always a reactor, must be abandoned in the light of present evidence. Therefore the adult who reacts to tuberculin should have the test repeated every three to five years to determine whether the sensitivity is waning or has completely disappeared.

The rapidity with which tubercle bacilli die in human bodies varies greatly. In some apparently only a few years are required; in others, much longer, and in a considerable number the organisms live and retain their virulence over decades or the entire lifetime.

It is not known how long allergy lingers after all tubercle bacilli die in a human body. Some believe it is only a month or so, while others think that it may persist up to two years. In any event, there is no way to determine from the tuberculin reaction during this short period that all bacilli have died. Therefore, the safe course is to regard a tuberculin reaction as indicative of the presence of living tubercle bacilli.

There is still a belief that all adults have primary tuberculosis (tuberculous infection) and therefore would react to tuberculin. While this may have been true here a few decades ago and still is in some parts of the world, such a belief is now obsolete in most parts of the United States. Controlling tuberculosis in domestic animals, isolating large numbers of contagious cases in man in hospitals and sanatoriums and adequate treatment of many others have protected large numbers of children and adults from becoming infected. These, together with those in whom infections die, constitute the majority of adults in many places. Jordan reported the tuberculin testing of nearly 3,698 adults ranging from 21 to 71 years, of whom only 21.6 per cent reacted to tuberculin. Therefore it is as important to test adults as children, and the significance of the reaction is the same in adulthood as in childhood.

## "LIPAN"

*To the Editor:*—Please furnish information about "lipan" in treatment of psoriasis. W. W. Sherwood, M.D., Los Angeles.

ANSWER.—"Lipan," according to the labeling, is a tablet containing undeclared amounts of powdered pancreas, vitamin $B_1$, vitamin D and sodium bicarbonate. Its use in psoriasis is based on the doubtful theory that this disease is due to a defect in lipid metabolism. Presumably the powdered pancreas furnishes a source of lipase.

As pointed out by Beckman (Treatment in General Practice, Philadelphia, W. B. Saunders Company, 1945) psoriasis "will respond at times to almost anything or again to nothing at all." Madden (J. A. M. A. **115**:588, 1940) who treated 112 patients with a large variety of agents, including vitamins D and $B_1$ did not observe impressive results. Schonberg (*Ohio State M. J.* **42**:254 [March] 1946) stated that the various types of parenteral and enteral medication employed in his series of 207 cases were not of apparent value.

Promoters of "lipan" stress its value in correcting faulty fat metabolism. They refer to the work of Dragstedt with lipocaic, a similar substance. The report of the Council on Pharmacy and Chemistry, "The Present Status of Lipocaic" (J. A. M. A. **115**:1454 [Oct. 26] 1940), asserted that conclusive evidence of the value of lipocaic in psoriasis is lacking. This view remains unaltered.

Competent dermatologists who have thoroughly investigated the relation of fat metabolism to psoriasis conclude that such relationship does not exist. "Lipan" is apparently offered on the basis of an untenable theory.

## PTEROYLTRIGLUTAMIC ACID

*To the Editor:*—Please give information on the use of "teropterin" (pteroyltriglutamic acid) in cancers involving the esophagus.

M. A. Johnson, M.D., Plainview, Neb.

ANSWER.—"Teropterin" (pteroyltriglutamic acid) is a folic acid derivative and has been found to inhibit and cause regression of spontaneous cancers of the breast in mice. The effectiveness of the drug on carcinoma of the esophagus, or of other parts of the human body, is questionable. Conclusive evidence has not yet developed that it is effective in the treatment of carcinoma. Pteroyltriglutamic acid may reduce pain and improve the sense of well-being in cases of esophageal carcinoma, but it cannot be used as a substitute for the usual methods of treatment; i. e., surgical extirpation, maintenance of nutrition, radiation therapy and measures contributing to comfort. At present experience with the drug is too limited to indicate definitely that it will be a valuable adjunct in the treatment of carcinoma. Dosage has been from 20 to 50 mg. a day, administered intramuscularly. No local or systemic reactions have been observed.

Attention is called to the Report of the Council on Pharmacy and Chemistry (J. A. M. A. **137**:699 [June 19] 1948), which, on the basis of the available evidence, concluded that beneficial effects from "teropterin" therapy of cancer had not been demonstrated.

## FETAL INJURY

*To the Editor:*—Is there a danger of an infant's being born deformed or injured physically or mentally if an unsuccessful attempt was made at termination of the conception? M.D., Wisconsin.

ANSWER.—The question is not clear. If by "termination of the conception" is meant the end of pregnancy then unsuccessful attempts to start labor cannot produce deformity of the baby. Likewise, unless there is direct injury to the baby's head by some mechanical means there will be no effects on the brain to produce mental disturbances.

If the query implies an unsuccessful attempt to empty the uterus immediately after conception takes place in order to produce an abortion, there is a possibility that harm may result in the fetus. Since coitus and fertilization occur within twenty-four hours, a curettement a day or two after this will secure only endomentrium and not decidua and certainly not products of conception. If there is no endometrial lining left to form decidua, it is almost certain that the fertilized ovum will not implant itself in the uterus but will perish. If there is some small amount of endometrium left in the uterus and it is defective for one reason or another and the ovum is implanted on this, the developing ovum can become abnormal because of faulty environment.

## COTTON THREAD SUTURES

*To the Editor:*—Can ordinary thread as it is bought in 5 and 10 cent stores (cotton) be used for minor operations? M.D., Tennessee.

ANSWER.—Ordinary cotton or silk thread such as is purchased in a dry goods store can be satisfactorily used for major or minor surgical operations. This thread can be sterilized and, except for some minor properties, is just as satisfactory as that supplied by the surgical supply houses.

## SYPHILIS

*To the Editor:*—In the Journal, August 21, page 1567, appears a query regarding management of a young man and a young woman, both of whom presumably have syphilis, with an answer to which I take issue.

On the basis of the inadequate information supplied, it is probable that the young man does have syphilis, although the duration of his infection cannot be determined from the information given. The reply correctly enquires whether this patient presents any physical evidence suggestive of syphilis and implies, although it does not definitely say so, that, if such physical evidence is present, further treatment may be desirable depending on the type of clinical abnormality. To this reply should be added the statement that further treatment, if any, cannot be planned without knowledge as to the patient's physical status. The reply also correctly suggests that the spinal fluid should be examined (including a Wassermann test). To this should be added that the spinal fluid examination should also include a cell count, quantitative protein determination, quantitatively titered complement fixation (not flocculation) test, and a colloidal test. The reply does not state what should be done if the spinal fluid is now normal. Should this prove to be the case and should the patient have no physical evidence of syphilis, he has now had enough treatment and none further need be given, regardless of the fact that he still has a "strongly positive" blood reaction.

The reply further indicates that if the spinal fluid is "positive," the patient should be given fever treatment and "simultaneous intravenous penicillin." This is definitely erroneous information. Whether fever treatment is necessary depends not only on whether the spinal fluid is "positive" but on the general pattern of spinal fluid abnormalities, if any are present. If the spinal fluid shows maximal abnormalities of the type usually associated with dementia paralytica (the so-called paretic formula), fever treatment *may* be desirable. If the spinal fluid abnormalities are less in degree than this, fever treatment is almost certainly unnecessary and penicillin, intramuscularly administered, total dose 10,000,000 to 20,000,000 units, is almost certainly entirely adequate. The intravenous use of penicillin in the treatment of syphilis has long since been abandoned.

As to the young woman in question, there is substantial doubt as to whether she has syphilis and, if so, whether she acquired it from the young man. The enquirer apparently treated this young woman on the sole ground that she had become pregnant by a man who had syphilis and was without any evidence of syphilis herself, since no data are given as to her examinations, clinical or laboratory, before treatment was administered to her. The fact that she has after treatment a "slightly positive" blood reaction suggests that she may have had a syphilitic infection, but, as the reply properly indicates, does not verify the fact, since she may have a biologic false positive serologic reaction. Nevertheless, her spinal fluid also should be examined although not until after delivery. No further treatment is necessary during her pregnancy and, if her spinal fluid and physical condition are normal, no further treatment need be given after delivery.

Assuming in each case physical normality and normal spinal fluids, both the male and female patient should be followed indefinitely in the manner frequently publicized for the followup of patients with early syphilis, most recently in the Report of the Syphilis Study Section to the Council on Pharmacy and Chemistry, "Penicillin in the Treatment of Syphilis," The Journal, March 27, page 873.

In all probability, the enquirer has gained nothing by giving the patients neoarsphenamine and bismuth in addition to 3,000,000 units of penicillin.

The reply states that the infant should be followed with a serologic test on the cord blood and "a monthly blood test" but does not indicate for how long this should be continued. This question is also discussed in the report of the Syphilis Study Section already referred to.

The enquirer states, "By law in Ohio they [this couple] are denied a marriage license." The reply suggests that after the enquirer has carried out all of the suggestions made in the reply, the marriage certificate might be issued. In many states, presumably including Ohio, a positive blood reaction in one or both applicants for marriage is not a bar to marriage unless the applicant is infectious. When both applicants for a marriage license have syphilis, it would be a reductio ad absurdum to withhold a marriage license. No pre-marital blood testing law adopted in any state is designed to prevent the marriage of a person who has syphilis but instead only to minimize the spread of syphilis in marriage. Almost certainly this young couple could have been married with medical and legal consent at any time they wished and there is absolutely no reason to defer marriage now. On the contrary, and for the sake of legitimization of the child, and assuming of course that the couple wish to marry, they may do so at once.

Finally, the reply to this enquiry contains the suggestion that treatment given to the girl should be modified if the man has a positive spinal fluid reaction. This is the first time, to my knowledge, that it has been proposed that one patient be treated in a certain manner because a different patient had something the matter with him. It should seem obvious that the treatment given to the girl depends on what the matter is with the girl, not on what the matter is with the man.

J. E. Moore, M.D., Baltimore.